

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 b14
 Edition : 16.08.93
 Replaces : 05.92
 Test oil : ISO-4113
 Combination no. : 9 400 083 458
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 -2
 EP type number : 9 410 230 028
 Governor
 Governor design. : RQV350...110DAB1218-
 1R
 Governor no. : 9 420 080 302

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT

1st version kw : 156.6
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance \pm - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm³ : 0.3

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm³ : 0.5

100 s: (0.9)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 6.90...7.10

2nd speed rpm : 350

travel mm : 1.40...1.90

3rd speed rpm : 650

travel mm : 4.20...4.70

4th speed rpm : 1400

travel mm : 8.70...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1325

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 800
Del. quantity : 117.0...119.0
1000 : (115.0...121.0)
Spread cm³ : 3.50
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:

1st rack travel in: 11.60
Speed rpm : 1155...1165
2nd rack travel in: 4.00
Speed rpm : 1340...1370
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 67...75

Testing:

Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 350...500

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.60...12.70
2nd speed rpm : 700
Rack travel in m: 13.60...13.70
3rd speed rpm : 800
Rack travel in m: 13.30...13.50
4th speed rpm : 950
Rack travel in m: 12.80...13.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500

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1st pressure hPa : -
Rack travel in m: 11.80...12.10
2nd pressure hPa : 600
Rack travel in m: 13.20...13.30
3rd pressure hPa : 500
Rack travel in m: 12.20...12.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800
Speed rpm : 700
Del. quantity cm³/ : 131.0...135.0
1000 s: (129.0...137.0)
Aneroid pressure h: 800
Speed rpm : 800
Del. quantity cm³/ : 128.5...132.5
1000 s: (126.5...134.5)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 93.5...95.5
1000 s: (91.5...97.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1155...1165

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 166.0...182.0
1000 s: (-)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del. quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 5.50
1000 s: (9.00)

Remarks:

: C.D.C. # 3354617
Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
Edition : 16.07.93
Replaces : -
Test oil : ISO-4113
Combination no. : 9 400 085 243
Injection pump
Pump designation : PES4A80D320RS1282-1
EP type number : 9 400 083 097
Governor
Governor design. : RS350/1500A2C2073-2R
Governor no. : 9 420 083 269

Customer-spec. information
Customer : MWM

Engine : D 229-4

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 419 992 198
Inlet press., bar : 1.50
Test nozzle holder assembly : 0 681 343 009
Opening pressure, bar : 172...175
Test lines : 1 680 750 003
Outside diameter x Wall thickness x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 2.65...2.75
: (2.60...2.80)
Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1500
Rack travel in mm : 9.20...9.30
Del. quantity cm3/ : 5.8...5.9
100 s: (5.6...6.0)
Spread cm3 : 0.2
100 s: (0.4)

2nd speed rpm : 350.0
Rack travel in mm : 6.0...6.2
Del. quantity cm3/ : 0.7...1.0
100 s: (0.5...1.2)
Spread cm3 : 0.4
100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1500
Del. quantity : 58.0...59.0
1000 : (56.5...60.5)
Spread cm3 : 2.50
1000 : (4.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 8.20

Speed rpm : 1540...1550
2nd rack travel in: 4.00
Speed rpm : 1585...1615
4th rack travel in: 1750
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 78...86
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 250
Minimum rack travel: 6.80
Speed rpm : 350
Rack travel in mm : 6.00...6.20
Rack travel in mm : 4.00
Speed rpm : 430...490
Speed rpm : 550
Maximum rack travel: 3.20

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1500
Rack travel in m: 9.20...9.30
2nd speed rpm : 500
Rack travel in m: 10.60...10.70
3rd speed rpm : 900
Rack travel in m: 10.20...10.40
4th speed rpm : 1200
Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 58.0...61.0
1000 s: (56.5...62.5)
Speed rpm : 900
Del.quantity cm³/ : 62.5...65.5
1000 s: (61.0...67.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.20
Speed rpm : 1540...1550

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 261
 Injection pump
 Pump designation : PES6A80D32ORS1271
 EP type number : 9 400 083 058
 Governor
 Governor design. : RSV350...1250AOC2029
 -3R
 Governor no. : 9 420 083 271

Customer-spec. information
 Customer : MWM

Engine : D 229-6

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 0 681 343 009
 Opening pressure, bar : 172...175
 Test lines : 1 680 750 003
 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.20...2.30
 : (2.15...2.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 8.20...8.30
 Del. quantity cm3/ : 4.9...5.0
 100 s: (4.8...5.2)
 Spread cm3 : 0.2
 100 s: (0.4)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.9...6.1
 Del. quantity cm3/ : 0.6...0.9
 100 s: (0.4...1.1)
 Spread cm3 : 0.4
 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del. quantity : 49.5...50.5
 1000 : (48.0...52.0)
 Spread cm3 : 2.50
 1000 : (4.00)

RATED SPEED

1st version
 Control lever
 position degrees: 102...110

Testing:

1st rack travel in: 7.20
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1320...1350
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 8.20...8.30
2nd speed rpm : 500
Rack travel in m: 9.80...9.90
4th speed rpm : 800
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 50.0...53.0
1000 s: (48.5...54.5)
Speed rpm : 800
Del.quantity cm³/ : 50.5...53.5
1000 s: (49.0...55.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.20
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

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Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 6.5...9.5
1000 s: (4.5...11.5)
Spread cm³ : 4.00
1000 s: (6.00)

Remarks:

APPLICATION:

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 h
 Edition : 16.07.93
 Replaces : 12.91
 Test oil : ISO-4113

Combination no. : 9 400 085 307

Injection pump
 Pump designation : PES4A95D410RS2774
 EP type number : 9 400 084 019
 Governor
 Governor design. : RQV300...1300AB1228-
 1L
 Governor no. : 9 420 080 268

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 364 A

1st version kw : 85.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.45)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.60...10.70

Del. quantity cm³/ : 9.0...9.2
 100 s: (8.8...9.4)

Spread cm³ : 0.3
 100 s: (0.8)

2nd speed rpm : 300.0
 Rack travel in mm : 6.9...7.1
 Del. quantity cm³/ : 0.8...1.2
 100 s: (0.5...1.4)

Spread cm³ : 0.5
 100 s: (0.9)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1500
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Aneroid pressure h: 700
 Del. quantity : 90.0...92.0
 1000 : (88.0...94.0)

Spread cm³ : 3.50
 1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 104...112

Testing:
1st rack travel in: 9.60
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1475...1505
4th rack travel in: 1640
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...72

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION
Speed rpm : 420...550

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.60...10.70
2nd speed rpm : 800
Rack travel in m: 11.00...11.10
4th speed rpm : 1000
Rack travel in m: 10.80...11.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 410
Rack travel in m: 10.60...10.80
3rd pressure hPa : 280
Rack travel in m: 9.70...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm³/ : 84.0...88.0
1000 s: (82.0...90.0)
Aneroid pressure h: 700
Speed rpm : 1000
Del.quantity cm³/ : 87.0...91.0
1000 s: (85.0...93.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 52.0...54.0
1000 s: (50.0...56.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.60
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...90.0
1000 s: (-)
Rack travel in mm : 12.90...13.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 16.08.93
 Replaces : 6.93
 Test oil : ISO-4113
 Combination no. : 9 400 085 314
 Injection pump
 Pump designation : PES6A90D320RS2718
 EP type number : 9 400 084 003
 Governor
 Governor design. : RSV350...1150A2C2097
 -2R
 Governor no. : 9 420 083 276

Customer-spec. information
 Customer : MWM

Engine : TD 229 EC-06

1st version kW : 117.8
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80
 : (2.65...2.85)

Rack travel in mm : 0 30...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.70...11.80

Del. quantity cm³/ : 9.0...9.1

100 s: (8.8...9.3)

Spread cm³ : 0.3

100 s: (0.7)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 90.5...91.5

1000 : (88.5...93.5)

Spread cm³ : 3.00

1000 : (7.00)

RATED SPEED

1st version

Control lever
position degrees: 93...101

Testing:
1st rack travel in: 10.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.0

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 590...650

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.70...11.80
2nd speed rpm : 500
Rack travel in m: 12.10...12.20
4th speed rpm : 800
Rack travel in m: 11.90...12.00

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 88.5...91.5
1000 s: (86.5...93.5)
Speed rpm : 800
Del.quantity cm³/ : 88.5...91.5
1000 s: (86.5...93.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 13.5...17.5
1000 s: (11.5...19.5)
Spread cm³ : 4.50
1000 s: (7.00)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 16.07.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 348
 Injection pump
 Pump designation : PES6A95D410RS2812
 EP type number : 9 400 084 028
 Governor
 Governor design. : RSV350...900A7C805L
 Governor no. : 9 420 083 263

Customer-spec. information
 Customer : MWM

Engine : 6.10 TCA

1st version kw : 154.5
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 1.50...2.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 13.6...13.8

100 s: (13.4...14.0)

Spread cm³ : 0.3

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm³ : 0.5

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 136.5...138.5

1000 : (134.5...140.5)

Spread cm³ : 3.50

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 13.00
Speed rpm : 900...905
2nd rack travel in: 4.00
Speed rpm : 941...954
4th rack travel in: 1100
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 365...425

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 13.90...14.00
2nd speed rpm : 550
Rack travel in m: 13.90...14.10
5th speed rpm : 400
Rack travel in m: 15.20...15.80

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.60
Del. quantity cm³/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm³ : 5.50
1000 s: (9.00)

Remarks:

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APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ
 Edition : 16.07.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 356
 Injection pump
 Pump designation : PES6A85D410RS2756
 EP type number : 9 400 093 006
 Governor
 Governor design. : RSV325...1150A1C1165
 L
 Governor no. : 9 420 083 290
 Customer-spec. information
 Customer : DEUTZ ARGENTINA
 Engine : BF6L913
 1st version kw : 118.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 003
 Outside diameter
 x wall thickness
 x Length mm : 6.00x2.00x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 11.30...11.40
 Del.quantity cm³/ : 7.2...7.3
 100 s: (7.0...7.5)
 Spread cm³ : 0.3
 100 s: (0.7)
 2nd speed rpm : 325.0
 Rack travel in mm : 7.9...8.1
 Del.quantity cm³/ : 0.9...1.3
 100 s: (0.7...1.5)
 Spread cm³ : 0.4
 100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del.quantity : 72.5...73.5
 1000 : (70.5...75.5)
 Spread cm³ : 3.00
 1000 : (7.00)

RATED SPEED

1st version
 Control lever
 position degrees: 110...118

Testing:
 1st rack travel in: 10.30
 Speed rpm : 1190...1200
 2nd rack travel in: 4.00

Speed rpm : 1220...1250
4th rack travel in: 1380
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 325
Rack travel in mm : 7.90...8.10
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.30...11.40
2nd speed rpm : 500
Rack travel in m: 13.00...13.10
4th speed rpm : 800
Rack travel in m: 12.20...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 78.0...81.0
1000 s: (76.0...83.0)
Speed rpm : 800
Del.quantity cm3/ : 75.0...78.0
1000 s: (73.0...80.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.90...8.10
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)

Spread cm3 : 4.50
1000 s: (7.00)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 357
 Injection pump
 Pump designation : PES6A80D410RS2755
 EP type number : 9 400 093 005
 Governor
 Governor design. : RSV325...1150A1C1165
 L
 Governor no. : 9 420 083 290

Customer-spec. information
 Customer : DEUTZ ARGENTINA

Engine : F6L913

1st version kw : 96.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.30...9.40

Del.quantity cm³/ : 5.4...5.5

100 s: (5.2...5.6)

Spread cm³ : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.9

100 s: (0.4...1.1)

Spread cm³ : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 54.0...55.0

1000 : (52.5...56.5)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 8.30

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1210...1240
4th rack travel in: 1380
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 325
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.30...9.40
2nd speed rpm : 500
Rack travel in m: 11.10...11.20
4th speed rpm : 800
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 61.0...64.0
1000 s: (59.5...65.5)
Speed rpm : 800
Del.quantity cm3/ : 56.0...59.0
1000 s: (54.5...60.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 6.0...9.0
1000 s: (4.0...11.0)

Spread cm3 : 4.00
1000 s: (6.00)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 358
 Injection pump
 Pump designation : PES5A80D41ORS2526
 EP type number : 9 400 093 007
 Governor
 Governor design. : RSV325...1075A1C1166
 L
 Governor no. : 9 420 083 291
 Customer-spec. information
 Customer : DEUTZ ARGENTINA
 Engine : F5L913
 1st version kw : 87.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 003
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075
 Rack travel in mm : 9.40...9.50
 Del. quantity cm³/ : 5.2...5.3
 100 s: (5.1...5.5)
 Spread cm³ : 0.2
 100 s: (0.4)

2nd speed rpm : 325.0
 Rack travel in mm : 6.4...6.6
 Del. quantity cm³/ : 0.6...0.9
 100 s: (0.4...1.1)
 Spread cm³ : 0.4
 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1075
 Del. quantity : 52.5...53.5
 1000 : (51.0...55.0)
 Spread cm³ : 2.50
 1000 : (4.00)

RATED SPEED

1st version
 Control lever
 position degrees: 107...115

Testing:
 1st rack travel in: 8.40
 Speed rpm : 1115...1125
 2nd rack travel in: 4.00

Speed rpm : 1140...1170
4th rack travel in: 1320
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 325
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 9.40...9.50
2nd speed rpm : 500
Rack travel in m: 11.20...11.30
4th speed rpm : 800
Rack travel in m: 10.40...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 61.0...64.0
1000 s: (59.5...65.5)
Speed rpm : 800
Del.quantity cm3/ : 56.5...59.5
1000 s: (55.0...61.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 6.0...9.0
1000 s: (4.0...11.0)

Spread cm3 : 4.00
1000 s: (6.00)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 359
 Injection pump
 Pump designation : PES4A80D410RS2523
 EP type number : 9 400 093 008
 Governor
 Governor design. : RSV325...1075A1C1166
 L
 Governor no. : 9 420 083 291

Customer-spec. information
 Customer : DEUTZ ARGENTINA

Engine : F4L913

1st version kw : 56.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 10.20...10.30

Del.quantity cm³/ : 6.0...6.1

100 s: (5.8...6.2)

Spread cm³ : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.9

100 s: (0.4...1.1)

Spread cm³ : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Del.quantity : 60.0...61.0

1000 : (58.5...62.5)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 9.20

Speed rpm : 1115...1125

2nd rack travel in: 4.00

Speed rpm : 1145...1175
4th rack travel in: 1320
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 10.20...10.30
2nd speed rpm : 500
Rack travel in m: 11.00...11.10
4th speed rpm : 750
Rack travel in m: 10.50...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 59.5...62.5
1000 s: (58.0...64.0)
Speed rpm : 750
Del.quantity cm³/ : 57.5...60.5
1000 s: (56.0...62.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 6.0...9.0
1000 s: (4.0...11.0)

Spread cm³ : 4.00
1000 s: (6.00)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 16.07.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 085 361
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 -2
 EP type number : 9 410 230 028
 Governor
 Governor design. : RQV350...115DAB1274R
 Governor no. : 9 420 080 347

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CT - 8.3 L

1st version kW : 146.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.60...11.70

Del.quantity cm³/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm³ : 0.3

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm³/ : 1.1...1.5

100 s: (0.9...1.8)

Spread cm³ : 0.5

100 s: (0.9)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150

travel mm : 8.20...8.40

2nd speed rpm : 350

travel mm : 2.10...2.60

3rd speed rpm : 550

travel mm : 3.70...4.20

4th speed rpm : 850

travel mm : 5.40...5.90

5th speed rpm : 1300

travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1160

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 600
Del.quantity : 103.0...105.0
1000 : (101.0...107.0)
Spread cm³ : 3.50
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 10.60
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1280...1310
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack travel: 10.50
Speed rpm : 350
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.60...11.70
2nd speed rpm : 600
Rack travel in m: 12.20...12.30
3rd speed rpm : 800
Rack travel in m: 12.00...12.10
4th speed rpm : 900
Rack travel in m: 11.80...11.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1150
Pressure hPa : 600
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 1150

1st pressure hPa : -
Rack travel in m: 10.70...10.80
2nd pressure hPa : 330
Rack travel in m: 10.90...11.00
3rd pressure hPa : 380
Rack travel in m: 11.30...11.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 600
Speed rpm : 600
Del.quantity cm³/ : 107.0...111.0
1000 s: (105.0...113.0)
Aneroid pressure h: 600
Speed rpm : 800
Del.quantity cm³/ : 108.0...112.0
1000 s: (106.0...114.0)
Aneroid pressure h: -
Speed rpm : 1150
Del.quantity cm³/ : 89.5...91.5
1000 s: (87.5...93.5)
Spread cm³ : 3.50
1000 s: (8.00)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.60
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 165.0...181.0
1000 s: (162.0...184.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.70...5.90
Del.quantity cm³/ : 11.5...15.5
1000 s: (9.0...18.0)
Spread cm³ : 5.50
1000 s: (9.00)

Remarks: : C.D.C. # 3353787

Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 n
 Edition : 02.08.91
 Replaces : 03.91
 Test oil : ISO-4113
 Combination no. : 9 400 087 319
 Injection pump
 Pump designation : PE6P110A720RS371-1
 EP type number : 0 411 816 166
 Governor
 Governor design. : RQV300...1050PA747
 Governor no. : 9 420 080 195

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 355 A

1st version kW : 210.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 16.1...16.3

100 s: (15.9...16.5)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 1.6...2.1

100 s: (1.4...2.3)

Spread cm³ : 0.3

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1070

travel mm : 8.50...8.60

2nd speed rpm : 270

travel mm : 0.80...1.20

3rd speed rpm : 450

travel mm : 2.80...3.10

4th speed rpm : 800

travel mm : 5.50...5.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 161.0...163.0

1000 : (159.0...165.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 99...107

Testing:
1st rack travel in: 10.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 48...56

Testing:
Speed rpm : 100
Minimum rack trave: 8.60
Speed rpm : 300
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 270...340

START CUT-OUT

Speed 1/min : 230 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 152.0...156.0
1000 s: (149.0...159.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...145.0
1000 s: (116.0...149.0)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 c
 Edition : 20.08.93
 Replaces : 02.05.89
 Test oil : ISO-4113

Combination no. : 9 400 087 376

Injection pump
 Pump designation : PES6P110A720RS3193
 EP type number : 9 400 087 057
 Governor
 Governor design. : RSV650...1250P8A528
 Governor no. : 9 420 082 323

Customer-spec. information
 Customer : FORD FNH

Engine : 7.8 L

1st version kW : 140.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 9 401 087 214

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.25...4.35
 : (4.20...4.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 650.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm³/ : 0.8...1.2
 100 s: (0.5...1.5)

Spread cm³ : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 132.0...134.0

1000 : (130.0...136.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 12.20

Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1300...1320
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 6.0

Testing:

Speed rpm : 600
Minimum rack trave: 10.00
Speed rpm : 650
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 685...745

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm³/ : 110.0...114.0
1000 s: (108.0...116.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (131.0...159.0)
Rack travel in mm : 20.00...21.00

Remarks:

:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 429
 Injection pump
 Pump designation : PES6P120A72ORS3256-3
 EP type number : 9 400 087 079
 Governor
 Governor design. : RQV350...1300PA1096
 Governor no. : 9 420 080 349

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 156.6
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm³/ : 1.7...2.0

100 s: (1.4...2.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.5...7.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.40...8.60

2nd speed rpm : 350

travel mm : 1.00...1.50

3rd speed rpm : 650

travel mm : 3.90...4.40

4th speed rpm : 1100

travel mm : 6.20...6.70

5th speed rpm : 1460

travel mm : 9.30...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm³ : 2.00
1000 : (3.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 10.80
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1570
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:
Speed rpm : 250
Minimum rack trave: 9.50
Speed rpm : 350
Rack travel in mm : 7.50...7.80

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 11.80...12.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.20
2nd pressure hPa : 300
Rack travel in m: 10.60...10.80
3rd pressure hPa : 600
Rack travel in m: 11.80...12.00

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 157.0...159.0
1000 s: (154.0...162.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm³/ : 141.0...145.0
1000 s: (138.0...148.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 69.0...71.0
1000 s: (66.0...74.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (96.0...124.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.50...7.80
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking takes place
with piston stroke 4.05 mm (as of BCD)
at no. 1 cylinder.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 430
 Injection pump
 Pump designation : PES6P120A72ORS3256-3
 EP type number : 9 400 087 079
 Governor
 Governor design. : RQV350...1300PA1096-
 1
 Governor no. : 9 420 080 350

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 171.5
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm³/ : 1.7...2.0

100 s: (1.4...2.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.5...7.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 8.40...8.60

2nd speed rpm : 350
 travel mm : 1.00...1.50

3rd speed rpm : 650
 travel mm : 3.90...4.40

4th speed rpm : 1100
 travel mm : 6.20...6.70

5th speed rpm : 1460
 travel mm : 9.30...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: _____

Speed rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm³ : 2.00
1000 : (3.00)

RATED SPEED

1st version
control lever
position degrees: 109...117

Testing:

1st rack travel in: 11.60
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1455...1485
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:

Speed rpm : 250
Minimum rack travel: 9.50
Speed rpm : 350
Rack travel in mm : 7.50...7.80

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.60...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.20
2nd pressure hPa : 300
Rack travel in m: 10.60...10.80
3rd pressure hPa : 700
Rack travel in m: 12.20...12.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

B04

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 177.0...179.0
1000 s: (174.0...182.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm³/ : 159.0...163.0
1000 s: (156.0...166.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 69.0...71.0
1000 s: (66.0...74.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0
1000 s: (96.0...124.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.50...7.80
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking takes place
with piston stroke 4.05 mm (as of BCD)
at no. 1 cylinder.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 9 400 087 431

Injection pump
 Pump designation : PES6P120A720RS3256-2
 EP type number : 9 400 087 080
 Governor
 Governor design. : RQV350...1300PA1096-
 2
 Governor no. : 9 420 080 351

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kw : 141.7
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 20.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del. quantity cm³/ : 1.7...2.0
 100 s: (1.4...2.3)

Spread cm³ : 0.2
 100 s: (0.3)

2nd speed rpm : 350.0
 Rack travel in mm : 7.5...7.8
 Del. quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350
 travel mm : 8.40...8.60

2nd speed rpm : 350
 travel mm : 1.00...1.50

3rd speed rpm : 650
 travel mm : 3.90...4.40

4th speed rpm : 1100
 travel mm : 6.20...6.70

5th speed rpm : 1460
 travel mm : 9.30...9.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1360
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm³ : 2.00
1000 : (3.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 9.70
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 250
Minimum rack travel: 9.50
Speed rpm : 350
Rack travel in mm : 7.50...7.80

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 10.70...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.20
2nd pressure hPa : 250
Rack travel in m: 10.40...10.60
3rd pressure hPa : 340
Rack travel in m: 10.70...11.00

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

B06

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm³/ : 117.0...121.0
1000 s: (114.0...124.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 69.0...71.0
1000 s: (66.0...74.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.50...7.80
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking takes place
with piston stroke 4.05 mm (as of BCD)
at no. 1 cylinder.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR 7,8 n 3
 Edition : 16.07.93
 Replaces : 05.91
 Test oil : ISO-4113

Combination no. : 9 400 087 441

Injection pump
 Pump designation : PES6P110A720RS3267
 EP type number : 9 400 087 072
 Governor
 Governor design. : RSV650...125QP8A528
 -1
 Governor no. : 9 420 082 328

Customer-spec. information
 Customer : FORD FNH

Engine : 7.8 L

1st version kW : 149.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 9 401 087 403

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

B07

Prestroke mm : 4.25...4.35
 : (4.20...4.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 14.1...14.3

100 s: (13.9...14.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 0.9...1.3

100 s: (0.6...1.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 141.5...143.5

1000 : (139.5...145.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 12.70
Speed rpm : 1260...1270
2nd rack travel in: 4.00
Speed rpm : 1300...1310
3rd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 650
Rack travel in mm : 5.2

Testing:

Speed rpm : 600
Minimum rack trave: 10.00
Speed rpm : 650
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 670...730

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm³/ : 123.0...127.0
1000 s: (121.0...129.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.70
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (131.0...159.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 650
Rack travel in mm : 5.60...5.80
Del.quantity cm³/ : 9.0...13.0
1000 s: (6.0...16.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 449EB
 Injection pump
 Pump designation : PES6P120A320/3RS3264
 EP type number : 9 400 087 075
 Governor
 Governor design. : RQV350...1100PA973
 Governor no. : 9 420 080 293

Cust. part no. : 3355296-VERSA041

Customer-spec. information
 Customer : CUMMINS

Engine : 6 CTA - 8.3 L

1st version kW : 194.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.45...3.55
 : (3.40...3.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 11.00...11.10
 Del. quantity cm³/ : 18.9...19.1
 100 s : (18.6...19.4)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.9...6.1
 Del. quantity cm³/ : 0.5...1.1
 100 s : (0.3...1.3)
 Spread cm³ : 0.5
 100 s : (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1150
 travel mm : 7.00...7.10
 2nd speed rpm : 350
 travel mm : 1.40...1.80
 3rd speed rpm : 650
 travel mm : 4.30...4.70
 4th speed rpm : 1400
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1325
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200

Del.quantity : 189.0...191.0
1000 : (186.0...194.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:

1st rack travel in: 10.00
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 66...74

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 425...575

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 430
Rack travel in m: 9.40...9.50
3rd pressure hPa : 700
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 187.0...191.0
1000 s: (184.0...194.0)
Spread cm3 : 6.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 116.0...119.0
1000 s: (114.0...121.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...290.0
1000 s: (256.0...294.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 5.0...11.0
1000 s: (3.0...13.0)
Spread cm3 : 5.00
1000 s: (8.00)

Remarks:

:
Start-of-delivery mark is at 8° after
start of delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 450
 Injection pump
 Pump designation : PES6P120A72ORS3256-2
 EP type number : 9 400 087 080
 Governor
 Governor design. : RQV350...1300PA1097
 Governor no. : 9 420 080 352

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 126.8
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm³/ : 1.7...2.0

100 s: (1.4...2.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.5...7.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.40...8.60

2nd speed rpm : 350

travel mm : 1.00...1.50

3rd speed rpm : 650

travel mm : 3.90...4.40

4th speed rpm : 1100

travel mm : 6.20...6.70

5th speed rpm : 1460

travel mm : 9.30...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm³ : 2.00
1000 : (3.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 9.70
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 76...84

Testing:
Speed rpm : 250
Minimum rack travel: 9.50
Speed rpm : 350
Rack travel in mm : 7.50...7.80

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 10.70...10.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.20
2nd pressure hPa : 350
Rack travel in m: 10.20...10.40
3rd pressure hPa : 420
Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 140.0...142.0
1000 s: (137.0...145.0)

Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm³/ : 117.0...121.0
1000 s: (114.0...124.0)

Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 69.0...71.0
1000 s: (66.0...74.0)

Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.50...7.80
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)

Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Start-of-delivery blocking takes place
with piston stroke 4.05 mm (as of BCD)
at no. 1 cylinder.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 15.06.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 9 400 087 472

Injection pump
 Pump designation : PES6P120A720LS7114
 -13

EP type number : 0 412 726 867
 Governor
 Governor design. : RQV300...1050PA1041
 -1

Governer no. : 9 420 080 335

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 LA

1st version kW : 257.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

 Rack travel in mm : 13.40...13.60

 Del.quantity cm³/ : 22.5...22.7
 100 s: (22.2...23.0)

 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.8...6.2
 Del.quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.60
 2nd speed rpm : 500
 travel mm : 3.00...3.50
 3rd speed rpm : 900
 travel mm : 5.60...6.10
 4th speed rpm : 1100
 travel mm : 7.40...7.90
 5th speed rpm : 1210
 travel mm : 9.30...9.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 780
Del. quantity : 225.0...227.0
1000 : (222.0...230.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 12.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 325...500

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.10...13.30
2nd speed rpm : 800
Rack travel in m: 14.00...14.20
3rd speed rpm : 930
Rack travel in m: 13.60...13.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 780
Rack travel mm : 13.40...13.60

Measurement
Speed 1/min : 600

1st pressure hPa : 240
Rack travel in m: 10.50...10.70
2nd pressure hPa : 560

Rack travel in m: 12.50...12.70
3rd pressure hPa : 920
Rack travel in m: 13.60...13.70
4th pressure hPa : 980
Rack travel in m: 13.80...13.90
5th pressure hPa : -
Rack travel in m: 9.60...9.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050
Del. quantity cm³/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1500
Speed rpm : 800
Del. quantity cm³/ : 237.5...240.5
1000 s: (234.5...243.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
 Edition : 16.08.93
 Replaces : 11.92
 Test oil : ISO-4113
 Combination no. : 9 400 087 473
 Injection pump
 Pump designation : PE6P120A32ORS3178-1
 EP type number : 0 411 826 764
 Governor
 Governor design. : RQV250...950PA921-13
 Governor no. : 0 421 813 796

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD 122 FK,FR

1st version kW : 287.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 25.9...26.1

100 s: (25.6...26.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.1

Del.quantity cm³/ : 1.7...2.2

100 s: (1.4...2.5)

Spread cm³ : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 3.60...4.20

3rd speed rpm : 700

travel mm : 6.40...6.60

4th speed rpm : 985

travel mm : 8.20...8.40

5th speed rpm : 1060

travel mm : 9.60...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 259.0...261.0
1000 : (256.0...264.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 13.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 4.80...5.10

CONSTANT REGULATION
Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.20...14.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.00...10.20
2nd pressure hPa : 100
Rack travel in m: 10.20...10.30
3rd pressure hPa : 865
Rack travel in m: 13.70...13.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 163.0...165.0
1000 s: (160.0...168.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.10
Del.quantity cm3/ : 17.5...22.5
1000 s: (14.5...25.5)
Spread cm3 : 5.00
1000 s: (7.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 16.07.93
 Replaces : 02.93
 Test oil : ISO-4113
 Combination no. : 9 400 087 476
 Injection pump
 Pump designation : PES6P120A720LS7181
 -10
 EP type number : 0 412 726 870
 Governor
 Governor design. : RQV300...1050PA1055
 Governor no. : 9 420 080 337

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447LA

1st version kW : 301.8
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

 Rack travel in mm : 15.10...15.20

 Del.quantity cm3/ : 26.5...26.7

 100 s: (26.2...27.0)

 Spread cm3 : 0.5

 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm3/ : 1.1...1.7
 100 s: (0.8...2.0)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.60
 2nd speed rpm : 500
 travel mm : 3.00...3.50
 3rd speed rpm : 900
 travel mm : 5.60...6.10
 4th speed rpm : 1100
 travel mm : 7.40...7.90
 5th speed rpm : 1210
 travel mm : 9.30...9.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1140
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050

Aneroid pressure h: 1200
Del.quantity : 265.0...267.0
 1000 : (262.0...270.0)
Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:

1st rack travel in: 14.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 64...72

Testing:

Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 325...475

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1200
Rack travel mm : 15.10...15.20

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.90...10.20
2nd pressure hPa : 500
Rack travel in m: 11.10...11.30
3rd pressure hPa : 820
Rack travel in m: 13.60...13.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 267.5...271.5
 1000 s: (264.5...274.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
 1000 s: (129.0...137.0)
Spread cm3 : 5.00
 1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 250.0...270.0
 1000 s: (246.0...274.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 11.0...17.0
 1000 s: (8.0...20.0)
Spread cm3 : 8.00
 1000 s: (12.00)

Remarks:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 087 477
 Injection pump
 Pump designation : PES6P120A72ORS3256-2
 EP type number : 9 400 087 080
 Governor
 Governor design. : RQV350...1300FA1098
 Governor no. : 9 420 080 353

Customer-spec. information
 Customer : ERCEDES-BENZ

Engine : OM 366 LA

1st version kW : 125.1
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 4.80...5.40

Del.quantity cm³/ : 1.7...2.0

100 s: (1.4...2.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 350.0

Rack travel in mm : 7.5...7.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.40...8.60

2nd speed rpm : 350

travel mm : 1.00...1.50

3rd speed rpm : 650

travel mm : 3.90...4.40

4th speed rpm : 1100

travel mm : 6.20...6.70

5th speed rpm : 1460

travel mm : 9.30...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1360

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 17.0...20.0
1000 : (14.0...23.0)
Spread cm³ : 2.00
1000 : (3.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 9.70
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 250
Minimum rack trave: 9.50
Speed rpm : 350
Rack travel in mm : 7.50...7.80

CONSTANT REGULATION
Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 10.70...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.20
2nd pressure hPa : 350
Rack travel in m: 10.20...10.40
3rd pressure hPa : 420
Rack travel in m: 10.50...10.70

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 140.0...142.0
1000 s: (137.0...145.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm³/ : 117.0...121.0
1000 s: (114.0...124.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 69.0...71.0
1000 s: (66.0...74.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (86.0...114.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.50...7.80
Del.quantity cm³/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 16.08.93
 Replaces : 02.93
 Test oil : ISO-4113

Combination no. : 9 400 087 479

Injection pump
 Pump designation : PES6P120A720LS7257
 -10

EP type number : 9 400 087 086
 Governor
 Governor design. : RGV300...1050PA1029
 -4

Governer no. : 9 420 080 340

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 447 LA

1st version kW : 257.6
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.60...4.70
 : (4.55...4.75)
 Rack travel in mm : 21.00...0.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.60...13.80

Del. quantity cm³/ : 24.6...24.8

100 s: (24.3...25.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.6
 Del. quantity cm³/ : 1.1...1.7
 100 s: (0.8...2.0)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1050
 travel mm : 7.70...7.90

2nd speed rpm : 300
 travel mm : 0.50...1.00

3rd speed rpm : 500
 travel mm : 3.00...3.50

4th speed rpm : 700
 travel mm : 5.20...5.70

5th speed rpm : 1165
 travel mm : 9.20...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1120
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
Aneroid pressure h: 1100
Del. quantity : 246.5...248.5
1000 : (243.5...251.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 12.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 275...425

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1100
Rack travel mm : 13.60...13.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 400
Rack travel in m: 10.80...11.00
3rd pressure hPa : 720
Rack travel in m: 12.60...12.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 1050
Del. quantity cm³/ : 245.0...249.0
1000 s: (242.0...252.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 122.0...124.0
1000 s: (119.0...127.0)
Spread cm³ : 5.00
1000 s: (9.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 225.0...245.0
1000 s: (221.0...249.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ
 Edition : 16.07.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 093 226
 Injection pump
 Pump designation : PES6A80D410RS2755
 EP type number : 9 400 093 005
 Governor
 Governor design. : RSV325...1150A1C1168
 L
 Governor no. : 9 420 083 293

Customer-spec. information
 Customer : DEUTZ ARGENTINA

Engine : F6L913

1st version kW : 96.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.30...9.40

Del.quantity cm³/ : 5.4...5.5

100 s: (5.2...5.6)

Spread cm³ : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.9

100 s: (0.4...1.1)

Spread cm³ : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 54.0...55.0

1000 : (52.5...56.5)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control Lever

position degrees: 114...122

Testing:

1st rack travel in: 8.30

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1215...1245
4th rack travel in: 1380
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 77...85
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 500...560

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.30...9.40
2nd speed rpm : 500
Rack travel in m: 11.10...11.20
4th speed rpm : 800
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 61.0...64.0
1000 s: (59.5...65.5)
Speed rpm : 800
Del.quantity cm³/ : 56.0...59.0
1000 s: (54.5...60.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 8.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ
 Edition : 16.07.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 093 227
 Injection pump
 Pump designation : PES6A85D410RS2756
 EP type number : 9 400 093 006
 Governor
 Governor design. : RSV325...1150A1C1168
 L
 Governor no. : 9 420 083 293

Customer-spec. information
 Customer : DEUTZ ARGENTINA

Engine : BF6L913

1st version kW : 118.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.30...11.40

Del.quantity cm³/ : 7.2...7.3

100 s: (7.0...7.5)

Spread cm³ : 0.3

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 7.9...8.1

Del.quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 72.5...73.5

1000 : (70.5...75.5)

Spread cm³ : 3.00

1000 : (7.00)

RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:

1st rack travel in: 10.30

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1220...1250
4th rack travel in: 1380
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 325
Rack travel in mm : 7.40...7.60
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.30...11.40
2nd speed rpm : 500
Rack travel in m: 13.00...13.10
4th speed rpm : 800
Rack travel in m: 12.20...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm3/ : 78.0...81.0
1000 s: (76.0...83.0)
Speed rpm : 800
Del.quantity cm3/ : 75.0...78.0
1000 s: (73.0...80.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ
 Edition : 16.07.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 400 093 228
 Injection pump
 Pump designation : PES5A80D410RS2526
 EP type number : 9 400 093 007
 Governor
 Governor design. : RSV325...1075A1C1167
 L
 Governor no. : 9 420 083 292

Customer-spec. information
 Customer : DEUTZ ARGENTINA

Engine : F5L913

1st version kW : 87.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 9.40...9.50

Del.quantity cm³/ : 5.2...5.3

100 s: (5.1...5.5)

Spread cm³ : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.9

100 s: (0.4...1.1)

Spread cm³ : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 6.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Del.quantity : 52.5...53.5

1000 : (51.0...55.0)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 113...121

Testing:

1st rack travel in: 8.40

Speed rpm : 1115...1125

2nd rack travel in: 4.00

Speed rpm : 1150...1180
4th rack travel in: 1320
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 80...88
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 325
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 9.40...9.50
2nd speed rpm : 500
Rack travel in m: 11.20...11.30
4th speed rpm : 800
Rack travel in m: 10.40...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 61.0...64.0
1000 s: (59.5...65.5)
Speed rpm : 800
Del.quantity cm³/ : 56.5...59.5
1000 s: (55.0...61.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

:

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEZ
Edition : 16.07.93
Replaces : -
Test oil : ISO-4113

Combination no. : 9 400 093 229

Injection pump
Pump designation : PES4A80D410RS2523
EP type number : 9 400 093 008
Governor
Governor design. : RSV325...1075A1C1167
L
Governor no. : 9 420 083 292

Customer-spec. information
Customer : DEUTZ ARGENTINA

Engine : F4L913

1st version kw : 56.0
Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
: (1.85...2.05)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 10.20...10.30

Del.quantity cm³/ : 6.0...6.1

100 s: (5.8...6.2)

Spread cm³ : 0.2

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 0.6...0.9

100 s: (0.4...1.1)

Spread cm³ : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 7.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Del.quantity : 60.0...61.0

1000 : (58.5...62.5)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 115...123

Testing:

1st rack travel in: 9.20

Speed rpm : 1115...1125

2nd rack travel in: 4.00

Speed rpm : 1160...1190
4th rack travel in: 1320
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 81...89
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 325
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 10.20...10.30
2nd speed rpm : 500
Rack travel in m: 11.00...11.10
4th speed rpm : 750
Rack travel in m: 10.50...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 59.5...62.5
1000 s: (58.0...64.0)
Speed rpm : 750
Del.quantity cm³/ : 57.5...60.5
1000 s: (56.0...62.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.20
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

Remarks:

:

APPLICATION

Tractor (tractor engines)

C02

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a12
 Edition : 16.07.93
 Replaces : 10.91
 Test oil : ISO-4113

Combination no. : 9 400 230 097

Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1100AOC2190
 -8R
 Governor no. : 9 420 234 137

Customer-spec. information
 Customer : C.D.C.

Engine : 6 CT 8.3

1st version kW : 156.6
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.6...5.8

Del.quantity cm³/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 124.5...126.5

1000 : (122.5...128.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.30
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1185...1215
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 21...29
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 425
Rack travel in mm : 5.60...5.80

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 130.0...150.0
1000 s: (125.0...155.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 425
Rack travel in mm : 5.60...5.80
Del. quantity cm³/ : 15.0...19.0
1000 s: (12.5...21.5)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: C.D.C. # 3915959

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 10,9 c2
 Edition : 13.8.93
 Replaces : 3.4.90
 Test oil : ISO-4113
 Combination no. : 9 400 231 207
 Injection pump
 Pump designation : PES6P120A72ORS6008-1
 Governor
 Governor design. : RQV300/500...975PA
 591-5K

Cust. part no. : *

Customer-spec. information
 Customer : MACK

Engine : EES-350/SCAC

TEST BENCH REQUIREMENTS

Test oil
 Outlet temp, °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.5

Test nozzle holder
 assembly : *

Opening
 pressure, bar : 300...308

Test lines : 9 681 230 710

Outside diameter
 x Wall thickness
 x Length mm : 6.35x1.70x990.6

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 3.20...3.30
 : (3.15...3.35)
 Rack travel in mm : 10.50
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.5 (0.75)

BASIC SETTING

1st speed rpm : 975
 Rack travel in mm : 14.50...14.60
 Del. quantity cm³/ : 20.9...21.1
 100 s : (20.7...21.3)
 Spread cm³ : 0.45
 100 s : (0.75)
 2nd speed rpm : 300
 Rack travel in mm : 5.30...5.50
 Del. quantity cm³/ : 1.7...2.3
 100 s : (1.5...2.5)
 Spread cm³ : 0.55
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1020
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 975
 Del. quantity : 209.0...211.0
 1000 : (207.0...213.0)
 Spread cm³ : 4.5
 1000 : (7.5)

LOW IDLE 1

Control lever
 position degrees: 17.5...22.5

Testing:

Speed rpm : 250
 Minimum rack trave: 9.80
 Speed rpm : 400
 Rack travel in mm : 4.20...5.60
 Rack travel in mm : 2.00
 Speed rpm : 710...770

TORQUE CONTROL

Dimension a mm : 1.50
 Torque control curve - 1st version
 1st speed rpm : 975
 Rack travel in mm : 14.50
 2nd speed rpm : 900
 Rack travel in mm : 14.45...14.55
 3rd speed rpm : 700

Rack travel in m: 14.65...14.75
4th speed rpm : 650
Rack travel in m: 14.15...14.25
5th speed rpm : 500
Rack travel in m: 13.15...13.25

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 234.5...239.5
1000 s: (232.5...241.5)
Speed rpm : 650
Del.quantity cm³/ : 231.0...237.0
1000 s: (229.0...239.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
1000 s: (120.0...180.0)

LOW IDLE

Speed rpm : 300
Del.quantity cm³/ : 17.0...23.0
1000 s: (15.0...25.0)

Remarks:

See VDT-I-MAC 002

PLE dimension = 0.740" - 0.820"

*The test specifications apply to testing of the injection-pump assembly with the genuine engine/nozzle-and-holder assembly

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 16.08.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 9 407 083 284
 Injection pump
 Pump designation : PES4A80D32ORS1282
 EP type number : 9 400 083 056
 Governor
 Governor design. : RSV350...1150A2C2129
 -1R
 Governor no. : 9 420 083 282

Customer-spec. information
 Customer : MWM

Engine : D 229-4

1st version kW : 53.5
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 4.00...5.00

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.80...8.90

Del. quantity cm³/ : 4.9...5.0

100 s: (4.8...5.2)

Spread cm³ : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 0.7...1.0

100 s: (0.5...1.2)

Spread cm³ : 0.4

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 49.5...50.5

1000 : (48.0...52.0)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever
position degrees: 93...101

Testing:
1st rack travel in: 7.90
Speed rpm : 1170...1180
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1400
Speed rpm : 0.30...1.70

LOW IDLE 1
Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.0

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 595...655

TORQUE CONTROL
Torque control curve - 1st version:
1st speed rpm : 1150
Rack travel in m: 8.80...8.90
2nd speed rpm : 500
Rack travel in m: 10.60...10.70
3rd speed rpm : 900
Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 53.5...56.5
1000 s: (52.0...58.0)
Speed rpm : 900
Del.quantity cm³/ : 52.5...55.5
1000 s: (51.0...57.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 7.90
Speed rpm : 1170...1180

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.40...6.60
Del.quantity cm³/ : 7.0...10.0
1000 s: (5.0...12.0)
Spread cm³ : 4.00
1000 s: (6.00)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 02.08.93
replaces : 07.12.92
Calibrating oil : ISO-4113
Injection pump : VE4/10F2050R364
Type number : 0 460 404 066
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.67.2580

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Setting value mm: 3.10...3.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Setting value bar: 4.50...5.10
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 2000
Del. quantity cm3/
1000S.: 41.00...42.00
Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.0
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 15.00...19.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2200
Del. quantity cm3/
1000S.: 14.00...20.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...100.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Inj.-qty. cm3/
difference 1000S.: 18.50...19.50 #
Shutoff

electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)

1.Speed 1/min: 1000
Supply pump
pressure
difference bar: 0.10...0.30#
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
TD travel mm: 7.30...8.10
mm: (7.00...8.40)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
TD travel mm: 3.10...3.50
mm: (2.60...4.00)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 600
TD travel mm: 0.80...1.60
mm: (0.50...1.90)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2000
TD travel mm: 8.20...9.00
mm: (7.90...9.30)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2000
Supply-pump pressure bar: 7.00...7.60

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Supply-pump pressure bar: 4.50...5.10

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Supply-pump pressure bar: 3.50...4.10

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2330
Shutoff

electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

5th speed 1/min: 2200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 14.00...20.00
(13.00...21.00)

12th speed 1/min: 2000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 41.00...42.00
(39.50...43.5)

15th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 36.50...39.50
(35.50...40.50)

17th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000h.: 33.50...36.50
(32.50...37.50)

20th speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 31.50...38.50
(31.00...39.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff
electromagnet Volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 15.00...19.00
(12.00...22.00)

Dispersion cm³/1000s.: 3.0
(3.0)

2nd speed 1/min: 465
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...2.00
(0.00...2.00)

3rd speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 8.00...14.00
(6.00...16.00)

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Inj.-qty. cm³/ : 18.0..24.00 "
difference 1000S.: (17.0..25.0) "
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Inj.-qty. cm³/: + 4.0..6.0 '
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:

correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : 0.40...0.60 "
difference mm: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
TD-travel : 0.80...1.80 '

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...60.00
1000S.: (40.00...60.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 70.00...100.00
1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -
KF mm: 5.6...6.0
MS mm: 1.6...2.0
SVS max. mm: 1.9
Ya mm: 37.9...39.9
Yb mm: 40.9...46.5

Remarks:

:
:

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control

lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VM
Edition : 02.08.93
replaces : 03.12.92
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L414-1
Type number : 0 460 404 073
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 425 CLIRS

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 698 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 1.20...1.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 4.70...5.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 63.50...64.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.0
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 42.50...43.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 40.00...46.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 45.00...75.00
mind 1000S.: 45.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm³/
difference 1000S.: 7.00...9.00 #

Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1500
Supply pump
pressure
difference bar: - 0.1...0.3 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.20...1.60
mm: (0.70...2.10)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 4.00...4.80
mm: (3.70...5.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.60...8.20

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.70...5.30

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 700
Charge press. hPa: 1000
Supply-pump
pressure bar: 3.80...4.40

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 700
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
Charge-air pressure-setting
point hPa: 350
LDA-stroke mm: 7.0

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 54.00...55.00
1000s.: (52.00...57.00)

3rd speed 1/min: 2550
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...8.00
1000s.: (0.00...8.00)

5th speed 1/min: 2300
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 40.00...46.00
1000s.: (39.00...47.00)

9th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 61.50...64.50
1000s.: (60.00...66.00)

12th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 65.00...66.00
1000s.: (63.50...67.50)

18th speed 1/min: 700
Charge press. hPa: -
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 43.00...44.00
1000s.: (41.00...46.00)

20th speed 1/min: 700
Charge press. hPa: 1000
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 65.00...68.00
1000s.: (63.50...69.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (10.00...20.00)

Dispersion cm³/: 3.0
1000S.: (3.0)

2nd speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

3rd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 1.50...6.50
1000S.: (1.00...7.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Charge press. hPa: -
Inj.-qty. cm³/: -13.0..19.0 "
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : - 1.40..1.60"
difference mm: -
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1000
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.50...44.50
1000S.: (41.00...46.00)

Automatic starting fuel delivery:

1st speed 1/min: 400
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

2nd speed 1/min: 550
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.00...75.00
1000S.: (45.00...75.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: 5.2...5.6
MS	mm: 0.6...1.0
SVS max.	mm: 4.3
LDA stroke	mm: 7.0
Ya	mm: 38.8...40.8
Yb	mm: 36.2...45.8

Ajustement Potentiometer:

Supply voltage
pot. volt: 5.0
Output volt
pot. volt: 2.31

Remarks:

:
Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 02.08.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L503
Type number : 0 460 404 075
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 425 SLIRF FORD

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 500
Charge press. hPa: 1000
Setting value mm: 7.50...7.90
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 500
Charge press hPa: 1000
Setting value bar: 6.20...6.80
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000s.: 65.50...66.50
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.0
1000s.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000s.: 43.50...44.50
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000s.: 10.00...14.00
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000s.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm³/
1000s.: 35.00...41.00
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 36.00...60.00
mind 1000s.: 36.00
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications

Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 9.30...10.30
mm: (9.10...10.50)

Timing valve Volt: -

Shutoff

electromagnet Volt: 12
3rd speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 7.50...7.90
mm: (7.00...8.40)

Timing valve Volt: -

Shutoff

electromagnet Volt: 12
4th speed 1/min: 150
Charge press hPa: 1000
TD travel mm: 3.70...7.30
mm: -

Timing valve Volt: -

Shutoff

electromagnet Volt: 12
5th speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 0.00...1.00
mm: -

Timing valve Volt: 12.0

Shutoff

electromagnet Volt: 12
6th speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 8.50...9.50
mm: (8.30...9.70)

Timing valve Volt: -

Shutoff

electromagnet Volt: 12
7. Rotacao 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 0.00...0.60
mm: (0.00...0.60)

Timing valve Volt: 12.0

Shutoff

electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump pressure bar: 7.70...8.30
Timing valve Volt: -

Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump pressure bar: 6.20...6.80

Timing valve Volt: -

Shutoff

electromagnet Volt: 12
3rd speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 5.60...6.20
Timing valve Volt: -

Shutoff

electromagnet Volt: 12
4th speed 1/min: 150
Charge press. hPa: 1000
Supply-pump pressure bar: 4.00...5.60
Timing valve Volt: -

Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Overflow : 27.80...139.00
quantity cm³/10s: (12.80...154.00)

2nd speed 1/min: 2100
Charge press. hPa: 1000
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Overflow : 55.60...166.80
quantity cm³/10s: (40.60...181.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
Charge-air pressure-setting point hPa: 400
LDA-stroke mm: 6.7
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.50...56.50
1000S.: (53.50...58.50)

3rd speed 1/min: 2460
Charge press. hPa: 1000
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 1.00...9.00
1000S.: -

5th speed 1/min: 2300
Charge press. hPa: 1000
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 35.00...41.00
 1000S.: (34.00...42.00)

9th speed 1/min: 2100
 Charge press. hPa: 1000
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 62.50...65.50
 1000S.: (61.00...67.00)

12th speed 1/min: 1500
 Charge press. hPa: 1000
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 65.50...66.50
 1000S.: (64.00...68.00)

18th speed 1/min: 700
 Charge press. hPa: -
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 43.50...44.50
 1000S.: (41.50...46.50)

20th speed 1/min: 700
 Charge press. hPa: 1000
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 67.50...70.50
 1000S.: (66.00...72.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -
 Timing valve Volt: -

Idle delivery:

1st speed 1/min: 450
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...14.00
 1000S.: (7.00...17.00)

Dispersion cm³/: 3.0
 1000S.: (3.0)

2nd speed 1/min: 800
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 1.50...6.50
 1000S.: (0.00...8.00)

3rd speed 1/min: 500
 Timing valve Volt: -

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.50...8.50
 1000S.: (1.00...11.00)

Part-load del. at 3rd inj. - qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 Spacing mm: 12.0

1st speed 1/min: 1000
 Charge press. hPa: 1000
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 49.00...51.00
 1000S.: (47.50...52.50)

Automatic starting fuel delivery:

1st speed 1/min: 400
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...70.00
 1000S.: (40.00...70.00)

2nd speed 1/min: 550
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 25.00...45.00
 1000S.: (25.00...45.00)

4th speed 1/min: 100
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.00...60.00
 1000S.: (36.00...60.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.6
KF	mm: 5.4...5.8
MS	mm: 0.8...1.2
SVS max.	mm: 5.9
LDA stroke	mm: 6.7
Ya	mm: 43.2...45.2
Yb	mm: 26.9...33.9

Ajustement Potentiometer:

Supply voltage
pot. volt: 5.0
Output volt
pot. volt: 2.31

Remarks:

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2200/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
 Edition : 02.08.93
 replaces : 07.93
 Calibrating oil : ISO-4113
 Injection pump : VE4/10F2100R518
 Type number : 0 460 404 077
 Customer Part-No. :

Customer-specific information
 Customer : IVECO-SOFIM

Engine : 8140.67.2200

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 022

Opening
 Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 450

Start of delivery
 Prestroke mm: 0.2
 (from BDC): ±0.2(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Setting value mm: 4.40...4.60
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
 Setting value bar: 6.40...7.00
 Shutoff
 electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500
 Del. quantity cm³/
 1000S.: 42.50...43.50
 Shutoff
 electromagnet Volt: 12
 Dispersion cm³/: 3.0
 1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 375
 Del. quantity cm³/
 1000S.: 12.00...16.00
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 3.0
 1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
 Del. quantity cm³/
 1000S.: 27.00...31.00
 Shutoff
 electromagnet Volt: 12

Start:

Speed 1/min: 100
 Del. quantity cm³/: 65.00...105.00
 mind 1000S.: 65.00
 Shutoff
 electromagnet Volt: 12

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

Speed 1/min: 1500
 Inj.-qty. cm³/
 difference 1000S.: - 16.0..18.0 #
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1500
 Supply pump
 pressure
 difference bar: - 0.1...0.3 #
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
TD travel mm: 6.10...6.70
mm: (5.70...7.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1150
TD travel mm: 1.90...2.50
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2100
TD travel mm: 6.90...7.70
mm: (6.60...8.00)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1500
TD travel mm: 4.40...4.60
mm: (3.90...5.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Supply-pump pressure bar: 8.50...9.10

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Supply-pump pressure bar: 6.40...7.00

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 600
Supply-pump pressure bar: 3.20...3.80

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2600
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

5th speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...31.00
1000s.: (23.00...35.00)

9th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.50...45.50
1000s.: (41.50...46.50)

12th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.50...43.50
1000s.: (41.00...45.00)

15th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 39.50...42.50
1000s.: (38.50...43.50)

20th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.50...38.50
1000s.: (33.50...39.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...16.00
1000s.: (9.00...19.00)

Dispersion cm³/: 3.0
1000s.: (3.0)
2nd speed 1/min: 465
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)
Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1000
Inj.-qty. cm³/ : - 16.0..18.0"
difference 1000s.: -

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Inj.-qty. cm³/: + 0.0..2.0 "
difference 1000S.: -

TD-travel dif.measurement:
connettore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : - 0.4...0.6 "
difference mm: -

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
TD-travel : - 0.5..1.3 '
difference mm: -

Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...85.00
1000S.: (55.00...85.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.6...6.0
MS	mm: 1.7...1.9
Ya	mm: 37.9...39.9
Yb	mm: 41.8...47.0

Remarks:

:
:

Ya = Distance between VE flange and
speed-control lever in idle
position

Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position

Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 02.08.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100L553
Type number : 0 460 404 078
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : 425 CLIRZ/CLIRX

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 500
Charge press. hPa: 1000
Setting value mm: 7.50...7.90
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 500
Charge press hPa: 1000
Setting value bar: 5.60...6.20
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 67.50...68.50
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Dispersion cm³:/
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 700
Del. quantity cm³/
1000S.: 44.50...45.50
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450
Del. quantity cm³/
1000S.: 10.00...14.00
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³:/
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 46.00...52.00
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³:/
mind 1000S.: 36.00
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2100
Charge press hPa: 1000
TD travel mm: 9.30...10.30
mm: (9.10...10.50)
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Charge press hPa: 1000
TD travel mm: 7.50...7.90
mm: (7.00...8.40)
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
4th speed 1/min: 150
Charge press hPa: 1000
TD travel mm: 3.70...7.30
mm: -
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
5th speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 0.00...1.00
mm: -
Timing valve Volt: 12.0
Shutoff
electromagnet Volt: 12
6th speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 8.50...9.50
mm: (8.30...9.70)
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
7. Rotacao 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 0.00...0.60
mm: (0.00...0.60)
Timing valve Volt: 12.0
Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump pressure bar: 7.70...8.30
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1000
Charge press. hPa: 1000

Supply-pump pressure bar: 6.20...6.80
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
3rd speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 5.60...6.20
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
4th speed 1/min: 150
Charge press. hPa: 1000
Supply-pump pressure bar: 4.00...5.60
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: 1000
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Overflow : 27.80...139.00
quantity cm³/10s: (12.80...154.00)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Overflow : 55.60...166.80
quantity cm³/10s: (40.60...181.80)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 700
Charge-air pressure-setting point hPa: 500
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 58.00...59.00
1000s.: (56.00...61.00)
3rd speed 1/min: 2450
Charge press. hPa: 1000
Timing valve Volt: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.00...14.00
1000s.: (5.00...15.00)
5th speed 1/min: 2300
Charge press. hPa: 1000
Timing valve Volt: -
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 46.00...52.00
 1000s.: (45.00...53.00)
 9th speed 1/min: 2100
 Charge press. hPa: 1000
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 62.00...65.00
 1000s.: (60.50...66.50)
 12th speed 1/min: 1500
 Charge press. hPa: 1000
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 67.50...68.50
 1000s.: (66.00...70.00)
 18th speed 1/min: 700
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 44.50...45.50
 1000s.: (42.50...47.50)
 20th speed 1/min: 700
 Charge press. hPa: 1000
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 69.50...72.50
 1000s.: (68.00...74.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 450
 Del. quantity cm³/: 0.00...3.00
 1000s.: (0.00...3.00)
 Shutoff
 electromagnet volt: -
 Timing valve Volt: -

Idle delivery:

1st speed 1/min: 450
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 10.00...14.00
 1000s.: (7.00...17.00)
 Dispersion cm³/: 3.0
 1000s.: (3.0)
 2nd speed 1/min: 800
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 1.50...6.50
 1000s.: (0.00...8.00)
 3rd speed 1/min: 500
 Timing valve Volt: -

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 2.50...7.50
 1000s.: (0.00...10.00)

Part-load del.at 3rd inj.-qty.
 terza fermo della portata
 stop (EGR set)
 scarico) (ARF)
 gaz d'échappement-ARF)
 Spacing mm: 12.0

1st speed 1/min: 1000
 Charge press. hPa: 1000
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 49.00...51.00
 1000s.: (47.50...52.50)

Automatic starting fuel delivery:

1st speed 1/min: 400
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...70.00
 1000s.: (40.00...70.00)

2nd speed 1/min: 550
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 25.00...45.00
 1000s.: (25.00...45.00)

4th speed 1/min: 100
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 36.00...60.00
 1000s.: (36.00...60.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: 3.2...3.4
 KF mm: 5.2...5.6
 MS mm: 0.6...1.0
 Ya mm: 29.5...31.5
 Yb mm: 47.0...57.0

Ajustement Potentiometer:

Supply voltage
pot. volt: 5.0
Output volt
pot. volt: 2.31

Remarks:

Ya = Distance between VE flange and
speed-control lever in idle
position

Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position

Measurement point = edge of control
lever on distributor-head end

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2200
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2200/100

Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA
Edition : 02.08.93
replaces : 07.93
Calibrating oil : ISO-4113

Injection pump : VE4/10F2100R557
Type number : 0 460 404 079
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.67.2700

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.2
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Setting value mm: 4.40...4.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Setting value bar: 6.40...7.00
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del. quantity cm3/
1000S.: 42.50...43.50
Shutoff
electromagnet Volt: 12
Dispersion cm3/
1000S.: (3.0)

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 12.00...16.00
Shutoff
electromagnet Volt: 12
Del. quantity cm3/
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2300
Del. quantity cm3/
1000S.: 27.00...31.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 65.00...105.00
mind 1000S.: 65.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1500
Inj.-qty. cm3/
difference 1000S.: - 16.0...18.0 #
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1500
Supply pump
pressure
difference bar: - 0.1...0.3 #
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1800
TD travel mm: 6.10...6.70
mm: (5.70...7.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1150
TD travel mm: 1.90...2.50
mm: (1.50...2.90)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 2100
TD travel mm: 6.90...7.70
mm: (6.60...8.00)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1500
TD travel mm: 4.40...4.60
mm: (3.90...5.10)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2100
Supply-pump pressure bar: 8.50...9.10
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1500
Supply-pump pressure bar: 6.40...7.10
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 600
Supply-pump pressure bar: 3.20...3.80
Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)

2nd speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...139.00
(40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2600
Shutoff

electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 2300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 27.00...31.00
1000S.: (23.00...35.00)

9th speed 1/min: 2100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.50...45.50
1000S.: (41.50...46.50)

12th speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.50...43.50
1000S.: (41.00...45.00)

15th speed 1/min: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 39.50...42.50
1000S.: (38.50...43.50)

20th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.50...38.50
1000S.: (33.50...39.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...16.00
1000S.: (9.00...19.00)

Dispersion cm³/: 3.0
1000S.: (3.0)
2nd speed 1/min: 465
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1500
Inj.-qty. cm³/ : - 14.0..22.0"
difference 1000S.: -

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
Inj.-qty. cm³/: + 0.0...2.0 "
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1500
TD-travel : - 0.4..0.6 "
difference mm: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1500
TD-travel : - 0.5..1.3 "
difference mm: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...85.00
1000S.: (55.00...85.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 25.00...45.00
1000S.: (25.00...45.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 65.00...105.00
1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -
KF mm: 5.6...6.0
MS mm: 1.7...1.9
Ya mm: 37.9...39.9
Yb mm: 41.8...47.0

Remarks:

⋮

Ya = Distance between VE flange and
speed-control lever in idle
position

Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position

Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,4 C5
Edition : 02.08.93
replaces : 19.12.86
Calibrating oil : ISO-4113

Injection pump : VE6/10F2400L116-6
Type number : 0 460 406 054
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 087T-Vol (Aut.)

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 1.50...1.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

002

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 5.70...6.30
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/
1000S.: 42.60...43.60

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 26.70...27.70

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 415
Del. quantity cm3/
1000S.: 7.00...9.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2675
Charge press hPa: 750
Del. quantity cm3/
1000S.: 11.00...15.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2400
Charge press hPa: 750

TD travel mm: 3.70...4.50
mm: (3.40...4.80)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500

Charge press hPa: 750

TD travel mm: 1.50...1.90
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12

4th speed 1/min: 1200

Charge press hPa: 750

TD travel mm: 0.30...1.10
mm: (0.00...1.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600

Charge press. hPa: 750

Supply-pump pressure bar: 3.30...3.90

Shutoff
electromagnet Volt: 12

2nd speed 1/min: 1500

Charge press. hPa: 750

Supply-pump pressure bar: 5.70...6.30

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 2400

Charge press. hPa: 750

Supply-pump pressure bar: 8.00...8.60

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600

Shutoff
electromagnet Volt: 12

Overflow : 41.70...83.40
quantity cm³/10s: (27.80...97.30)

2nd speed 1/min: 2400

Charge press. hPa: 750

Shutoff
electromagnet Volt: 12

Overflow : 55.60...152.90
quantity cm³/10s: (41.70...152.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800

Charge-air pressure-setting point hPa: 300

LDA-stroke mm: 4.8

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 33.50...34.50
1000s.: (31.00...37.00)

2nd speed 1/min: 2850

Charge press. hPa: 750

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

5th speed 1/min: 2675

Charge press. hPa: 750

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 11.00...15.00
1000s.: (9.00...17.00)

8th speed 1/min: 2575

Charge press. hPa: 750

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 18.00...28.00
1000s.: (17.00...29.00)

9th speed 1/min: 2400

Charge press. hPa: 750

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 36.30...38.30
1000s.: (35.10...39.50)

12th speed 1/min: 1500

Charge press. hPa: 750

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 42.60...43.60
1000s.: (40.90...45.3)

18th speed 1/min: 600

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 26.70...27.70
1000s.: (24.20...30.20)

20th speed 1/min: 600

Charge press. hPa: 750

Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 35.50...38.50
1000s.: (34.00...40.00)

Mech. shutoff:
Mech. Abst.ellung:

1st speed 1/min: 2400

Charge press. hPa: -

Del. quantity cm³/: 0.00...3.00
1000s.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 415

Charge press. hPa: -

Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 415
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 7.00...9.00
1000S.: (4.00...12.00)

Dispersion cm³/: 2.0
1000S.: (3.0)

2nd speed 1/min: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

2nd speed 1/min: 430
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 6.4...6.8
MS mm: 1.9...2.1
SVS max. mm: 2,4
LDA stroke mm: 4.8
Ya mm: 8.5...10.5
Yb mm: 71.0...89.3

Remarks:

Ya = Distance between VE flange and

speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 10.93
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE6/10F2400L116-7
Type number : 0 460 406 076
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 072.4 (2.4L.) VOLVO

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 1.50...1.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 5.70...6.30

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/
1000S.: 42.60...43.60

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 26.70...27.70

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 430
Del. quantity cm3/
1000S.: 8.00...10.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2675
Charge press hPa: 750
Del. quantity cm3/
1000S.: 11.00...15.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2400
Charge press hPa: 750
TD travel mm: 3.70...4.50
mm: (3.40...4.80)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500
Charge press hPa: 750
TD travel mm: 1.50...1.90
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1200
Charge press hPa: 750
TD travel mm: 0.30...1.10
mm: (0.00...1.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 750
Supply-pump pressure bar: 3.30...3.90
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump pressure bar: 5.70...6.30
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 2400
Charge press. hPa: 750
Supply-pump pressure bar: 8.00...8.60
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(27.80...97.30)

2nd speed 1/min: 2400
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...138.90
(41.70...152.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800*
Charge-air pressure-setting point hPa: 300
LDA-stroke mm: 4.8
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 33.50...34.50
(31.00...37.00)
2nd speed 1/min: 2850

Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

5th speed 1/min: 2675
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 11.00...15.00
(9.00...17.00)

8th speed 1/min: 2575
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 18.00...28.00
(17.00...29.00)

9th speed 1/min: 2400
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 36.30...38.30
(35.10...39.50)

12th speed 1/min: 1500
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 42.60...43.60
(40.90...45.30)

18th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 26.70...27.70
(24.20...30.20)

20th speed 1/min: 600
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/1000s.: 35.50...38.50
(34.00...40.00)

Mech. shutoff:
Mech. Abstimmung:

1st speed 1/min: 2400
Charge press. hPa: 750
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 415
Charge press. hPa: -
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 430
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...10.00
1000S.: (5.00...13.00)
Dispersion cm³/: 2.0
1000S.: (3.0)
2nd speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

2nd speed 1/min: 430
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4
KF mm: 6.3...6.6
MS mm: 1.6...2.0
LDA stroke mm: 4.0

Remarks:

: ARF = VOLVO
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV
Edition : 10.93
replaces : 06.92
Calibrating oil : ISO-4113
Injection pump : VE6/10F2400L116-8
Type number : 0 460 406 077
Customer Part-No. :

Customer-specific information
Customer : VW

Engine : 072.4 (2.4L.) Vol

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 1.50...1.90
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 750
Setting value bar: 5.70...6.30

Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del. quantity cm3/
1000S.: 42.60...43.60

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 2.5
1000S.: (3.0)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 26.70...27.70

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 430
Del. quantity cm3/
1000S.: 8.00...10.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 2.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 2675
Charge press hPa: 750
Del. quantity cm3/
1000S.: 11.00...15.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...70.00
mind 1000S.: 40.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2400
Charge press hPa: 750
TD travel mm: 3.70...4.50
mm: (3.40...4.80)

Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1500
Charge press hPa: 750
TD travel mm: 1.50...1.90
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1200
Charge press hPa: 750
TD travel mm: 0.30...1.10
mm: (0.00...1.40)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 750
Supply-pump pressure bar: 3.30...3.90
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1500
Charge press. hPa: 750
Supply-pump pressure bar: 5.70...6.30
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 2400
Charge press. hPa: 750
Supply-pump pressure bar: 8.00...8.60
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 41.70...83.40
(27.80...97.30)
2nd speed 1/min: 2400
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Overflow quantity cm³/10s: 55.60...138.90
(41.70...152.90)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800*
Charge-air pressure-setting point hPa: 300
LDA-stroke mm: 4.8
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.50...34.50
1000S.: (31.00...37.00)
2nd speed 1/min: 2850

Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 2675
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...15.00
1000S.: (9.00...17.00)

8th speed 1/min: 2575
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 18.00...28.00
1000S.: (17.00...29.00)

9th speed 1/min: 2400
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.30...38.30
1000S.: (35.10...39.50)

12th speed 1/min: 1500
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.60...43.60
1000S.: (40.90...45.30)

18th speed 1/min: 600
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 26.70...27.70
1000S.: (24.20...30.20)

20th speed 1/min: 600
Charge press. hPa: 750
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 35.50...38.50
1000S.: (34.00...40.00)

Mech. shutoff: Mech. Abstellung:

1st speed 1/min: 2400
Charge press. hPa: 750
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 415
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 430
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 8.00...10.00
1000S.: (5.00...13.00)
Dispersion cm³/: 2.0
1000S.: (3.0)
2nd speed 1/min: 800
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 230
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...70.00
1000S.: (30.00...70.00)

2nd speed 1/min: 430
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...30.00
1000S.: (10.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...70.00
1000S.: (40.00...70.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: 6.3...6.6
MS mm: 1.6...2.0
LDA stroke mm: 4.0

Remarks:
: ARF = VOLVO
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3,6 C
Edition : 10.93
replaces : 02.91
Calibrating oil : ISO-4113

Injection pump : VE4/11F1250L164-2
Type number : 0 460 414 024
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8045.06.220

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42,00...50,00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
Pressure bar: 172.00...175.00

Perforated-plate
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0,2
(from BDC): ±0,02(0,04)

Indicator setting
Piston stroke mm: 1,0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800

Setting value mm: 3.00...3.40
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 800
Setting value bar: 4.10...4.70
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 750
Del. quantity cm³/
1000S.: 62.00...63.00

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 21.00...25.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 1350
Del. quantity cm³/
1000S.: 43.00...47.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 90.00...140.00
mind 1000S.: 90.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
TD travel mm: 5.40...6.20
mm: (5.10...6.50)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 800
TD travel mm: 3.00...3.40
mm: (2.50...3.90)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 600
 TD travel mm: 1.20...2.00
 mm: (0.90...2.30)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1000
 TD travel mm: 4.80...5.60
 mm: (4.50...5.90)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Supply-pump pressure bar: 3.20...3.80
 Shutoff
 electromagnet Volt: 12
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 800
 Supply-pump pressure bar: 4.10...4.70
 Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1250
 Supply-pump pressure bar: 6.10...6.70
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 (26.70...98.40)
 2nd speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)
 3rd speed 1/min: 1400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.00...18.00
 1000S.: (5.00...21.00)
 5th speed 1/min: 1350

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 43.00...47.00
 1000S.: (39.00...51.00)
 9th speed 1/min: 1250
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 52.00...55.00
 1000S.: (50.00...57.00)

Shutoff
 electromagnet Volt: 12
 12th speed 1/min: 750
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 62.00...63.00
 1000S.: (59.50...65.50)
 20th speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 57.00...61.00
 1000S.: (55.50...62.50)

Mech. shutoff:
 Mech. Abst \ddot{u} llung:

1st speed 1/min: 1250
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 350
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 21.00...25.00
 1000S.: (19.00...27.00)
 Dispersion cm³/: 3.5
 1000S.: (3.5)
 3rd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 150
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 100.00...150.00
1000S.: (100.00...150.00)

2nd speed 1/min: 250
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 30.00...50.00
1000S.: (30.00...50.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 90.00...140.00
1000S.: (90.00...140.00)

Shutoff electromagnet:

Cut-in
min voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation	
K	mm: -
KF	mm: 5,0...5,4
MS	mm: 1,4...1,8
SVS max.	mm: 4,3

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL
 Edition : 05.10.93
 replaces : -
 Calibrating oil : ISO-4113

 Injection pump : VE4/11F1900L111-1
 Type number : 0 460 414 025
 Customer Part-No. :

Customer-specific information
 Customer : VOLVO-PENTA

Engine : TAMD 30A

TEST BENCH REQUIREMENTS

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 000

Opening
 Pressure bar: 147.00...150.00

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): ±0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
 Setting value mm: 2.60...3.00

Supply-pump pressure

Speed 1/min: 1500
 Setting value bar: 6.2...6.8

Full-load del. with charge press.:

Speed 1/min: 1000
 Del. quantity cm³/
 1000S.: 71.50...72.50
 Dispersion cm³/: 3.5
 1000S.: (4.0)

Low-idle speed regulation

Speed 1/min: 325
 Del. quantity cm³/
 1000S.: 26.00...30.00
 Del. quantity cm³/: 3.0
 1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 2000
 Del. quantity cm³/
 1000S.: 42.00...48.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: -
 mind 1000S.: 80.0

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
 TD travel mm: 0.50...1.30
 mm: (0.20...1.60)
 2nd speed 1/min: 1500
 TD travel mm: 2.60...3.00
 mm: (2.10...3.50)
 3rd speed 1/min: 1850
 TD travel mm: 3.60...4.40
 mm: (3.30...4.70)

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Supply-pump
 pressure bar: 3.20...3.80
 2nd speed 1/min: 1500
 Supply-pump
 pressure bar: 6.20...6.80
 3rd speed 1/min: 1850
 Supply-pump
 pressure bar: 7.20...7.80

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)

2nd speed 1/min: 1900
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2200
Del. quantity cm³/: ... 7.00
1000S.: -
2nd speed 1/min: 2100
Del. quantity cm³/: 19.0...27.0
1000S.: (18.5...27.5)
3rd speed 1/min: 2000
Del. quantity cm³/: 42.0...48.0
1000S.: (40.5...49.5)
4th speed 1/min: 1850
Del. quantity cm³/: 68.5...71.5
1000S.: (67.3...72.7)
5th speed 1/min: 1000
Del. quantity cm³/: 71.50...72.50
1000S.: (69.30...74.70)
6th speed 1/min: 600
Del. quantity cm³/: 64.5...68.5
1000S.: (63.1...69.9)

Mech. shutoff:

Idle delivery:

1st speed 1/min: 325
Del. quantity cm³/: 26.00...30.00
1000S.: (23.50...32.50)
Dispersion cm³/: 3.0
1000S.: (4.0)
2nd speed 1/min: 450
Del. quantity cm³/: ... 7.0
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³/: 70.0 ...
1000S.: -
2nd speed 1/min: 450
Del. quantity cm³/: ... 70.0
1000S.: -
3rd speed 1/min: 100
Del. quantity cm³/: 80.0 ...
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

D15

Designation

K mm: -
KF mm: 5.6...6.0
MS mm: 1.2...1.4
SVS max. mm: 4.7
Ya mm: 41.3...43.3
Yb mm: 47.5...53.5

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 10.93
replaces : 06.92
Calibrating oil : ISO-4113

Injection pump : VE4/11F1500R266
Type number : 0 460 414 041
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : 500 HYDROVAN

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.5
(from BDC): ±0.02(0.04)

Indicator setting
Piston stroke mm: 1.42
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Setting value mm: 2.40...2.80

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Setting value bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1200
Del. quantity cm3/
1000S.: 51.00...52.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm3/
1000S.: 11.00...15.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1600
Del. quantity cm3/
1000S.: 12.00...18.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 70.00...100.00
mind 1000S.: 70.00
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
TD travel mm: 3.70...4.50
mm: (3.40...4.80)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
TD travel mm: 2.40...2.80
mm: (1.90...3.30)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 700
TD travel mm: 0.40...1.20
mm: (0.10...1.50)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 1350
TD travel mm: 3.40...4.20
mm: (3.10...4.50)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700
Supply-pump
pressure bar: 3.50...4.10

Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1100
Supply-pump
pressure bar: 4.90...5.50

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1500
Supply-pump
pressure bar: 6.40...7.00

Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1500
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 1200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 51.00...52.00
1000S.: (49.00...54.00)

3rd speed 1/min: 1650
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

5th speed 1/min: 1600
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 12.00...18.00
1000S.: (10.00...20.00)
9th speed 1/min: 1500

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 49.00...52.00
1000S.: (47.50...53.50)
10th speed 1/min: 800

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 34.50...37.50
1000S.: (34.50...37.50)
12th speed 1/min: 600

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 24.00...27.00
1000S.: (22.50...28.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 11.00...15.00
1000S.: (9.00...17.00)

Dispersion cm³/: 3.0
1000S.: (3.0)
2nd speed 1/min: 400

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 2.50...9.50
1000S.: (1.00...11.00)

3rd speed 1/min: 460
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 36.00...52.00
1000S.: (36.00...52.00)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 27.50...42.50
1000s.: (27.50...42.50)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 70.00...100.00
1000s.: (70.00...100.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: K-0T

MS mm: 1.2...1.45

SVS max. mm: 3.8

Ya mm: 28.5...30.5

Yb mm: 59.7...70.1

Remarks:

: "HIGH IDLE RESET"

: = PERKINS-TYPSCHILD

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER
Edition : 10.93
replaces : 03.93
Calibrating oil : ISO-4113

Injection pump : VE4/11F1500R266-1
Type number : 0 460 414 042
Customer Part-No. :

Customer-specific information
Customer : PERKINS

Engine : MARINE NA 3000

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.5
(from BDC): +0.02(0.04)

Indicator setting
Piston stroke mm: 1.42
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Setting value mm: 2.40...2.80

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Setting value bar: 4.90...5.50
Shutoff
electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1200
Del. quantity cm³/
1000S.: 48.50...49.50

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 3.5
1000S.: (3.5)

Low-idle speed regulation

Speed 1/min: 350
Del. quantity cm³/
1000S.: 11.00...15.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 3.0
1000S.: (3.0)

Full-load speed regulation

Speed 1/min: 1600
Del. quantity cm³/
1000S.: 12.00...18.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 70.00...100.00
mind 1000S.: 70.00

Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1500
TD travel mm: 3.70...4.50
mm: (3.40...4.80)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
TD travel mm: 2.40...2.80
mm: (1.90...3.30)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 700
 TD travel mm: 0.40...1.20
 mm: (0.10...1.50)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1350
 TD travel mm: 3.40...4.20
 mm: (3.10...4.50)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 700
 Supply-pump pressure bar: 3.50...4.10
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1100
 Supply-pump pressure bar: 4.90...5.50
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1500
 Supply-pump pressure bar: 6.40...7.00
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 41.70...83.40
 (26.70...98.40)
 2nd speed 1/min: 1500
 Shutoff
 electromagnet Volt: 12
 Overflow quantity cm³/10s: 55.60...139.00
 (40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 48.50...49.50
 (46.50...51.50)
 3rd speed 1/min: 1650
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 0.00...3.00
 (0.00...3.00)
 5th speed 1/min: 1600
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/1000s.: 12.00...18.00
 (10.00...20.00)
 9th speed 1/min: 1500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 46.00...50.00
 (45.50...51.50)
 10th speed 1/min: 800
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 33.00...36.00
 (33.00...36.00)
 12th speed 1/min: 600
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 22.00...25.00
 (20.50...26.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 350
 Del. quantity cm³/1000s.: 0.00...3.00
 (0.00...3.00)
 Shutoff
 electromagnet Volt: -

Idle delivery:

1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 11.00...15.00
 (9.00...17.00)
 Dispersion cm³/1000s.: 3.0
 (3.0)
 2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 2.50...9.50
 (1.00...11.00)
 3rd speed 1/min: 460
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 0.00...5.00
 (0.00...5.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/1000s.: 36.00...52.00
 (36.00...52.00)
 2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 24.50...39.50
1000S.: (24.50...39.50)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 70.00...100.00
1000S.: (70.00...100.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: K-OT

MS mm: 1.2..1.45

SVS max. mm: 3.8

Ya mm: 28.5...30.5

Yb mm: 59.7...70.1

Remarks:

:
:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 10.93
replaces : 12.91
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R294
Type number : 0 460 414 054
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.27.200

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.10...1.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.80...6.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1800
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 54.50...55.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm³/
1000S.: 29.50...30.50
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm³/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 20.50...26.50

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...80.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1100
Charge press hPa: 1000

Inj.-qty. cm³/
difference 1000s.: 25.0...33.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1100
TD-travel
difference mm: 0.40...0.60
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750
Charge press hPa: 1000
TD travel mm: 5.00...5.80
mm: (4.70...6.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.10...1.50
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 3.60...4.40
mm: (3.30...4.70)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 650
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.10...4.70
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.80...6.40
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1750
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.70...8.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 650

Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
Charge-air pressure-setting
point hPa: 450
LDA-stroke mm: 6,5
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 36.50...37.50
1000s.: (33.00...41.00)

2nd speed 1/min: 2350
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 0.00...5.00
1000s.: -

5th speed 1/min: 2200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 20.50...26.50
1000s.: (19.00...28.00)

8th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 40.50...48.50
1000s.: (38.50...50.50)

9th speed 1/min: 1900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 50.00...56.00
1000s.: (49.50...56.50)

11th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 52.50...57.50
1000s.: (51.00...59.00)

12th speed 1/min: 1800
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³: 54.50...55.50
1000s.: (51.50...58.50)

15th speed 1/min: 1100

Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 51.50...56.50
1000S.: (50.00...58.00)
18th speed 1/min: 650
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.50...20.50
1000S.: (26.50...33.50)
20th speed 1/min: 650
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 50.50...59.50
1000S.: (49.50...60.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm³/: 0.00...3.00
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (11.00...19.00)

Dispersion cm³/: 6.0
1000S.: (6.5)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: -

3rd speed 1/min: 325
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 39.00...49.00
1000S.: (38.00...50.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1100
Charge press. hPa: 1000
Inj.-qty. cm³/ : 24.5...26.5 #
difference 1000S.: -
KSB/AFB

valve Volt: 12
4th speed 1/min: 1100
Charge press. hPa: 1000
Inj.-qty. cm³/: 2.00...8.00 ≡
difference 1000S.: -

Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1100
Charge press. hPa: 1000
TD-travel : 0.40...1.20 ≡
difference mm: -
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1100
Charge press. hPa: 1000
Supply pump-
pressure : 0.10...0.30 #
difference bar: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...78.00
1000S.: -

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 12.00...48.00
1000S.: -

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...80.00
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
K mm: 3.2...3.4
KF mm: K-OT
MS mm: 0.6...1.0
SVS max. mm: 2.5
LDA stroke mm: 6.5
XK mm: 21.8...23.8
XL mm: 12.3...15.7

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation

speed 1/min :2200

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :2200

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :2200/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 10.93
replaces : 10.91
Calibrating oil : ISO-4113
Injection pump : VE4/11F1900R294-2
Type number : 0 460 414 081
Customer Part-No. :

Customer-specific information
Customer : SOFIM

Engine : 8140.27.2510/210

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1100
Charge press. hPa: 1000
Setting value mm: 1.10...1.50
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1100
Charge press hPa: 1000
Setting value bar: 5.80...6.40
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 49.00...50.00

Shutoff
electromagnet Volt: 12
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm3/
1000S.: 29.50...30.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375
Del. quantity cm3/
1000S.: 13.00...17.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2200
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 19.00...25.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/: 40.00...80.00
mind 1000S.: 40.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1100
Charge press hPa: 1000

Inj.-qty. cm3/
difference 1000S.: -25.00...-33.00
Shutoff
electromagnet Volt: 12
TD-travel dif.measurement
correttore anticipo iniezione (SV)
1.Speed 1/min: 1100
Charge press hPa: 1000
TD-travel
difference mm: -0.40...-0.60
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1750
Charge press hPa: 1000
TD travel mm: 5.00...5.80
mm: (4.70...6.10)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1100
Charge press hPa: 1000
TD travel mm: 1.10...1.50
mm: (0.60...2.00)

Shutoff
electromagnet Volt: 12
6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 3.60...4.40
mm: (3.30...4.70)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 650
Charge press. hPa: 1000
Supply-pump
pressure bar: 4.50...5.10
Shutoff

electromagnet Volt: 12
2nd speed 1/min: 1100
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.80...6.40
Shutoff

electromagnet Volt: 12
3rd speed 1/min: 1750
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.70...8.30
Shutoff

electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 650
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Overflow : 41.70...83.40
quantity cm3/10s: (26.70...98.40)
2nd speed 1/min: 1900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Overflow : 55.60...139.00
quantity cm3/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800*
Charge-air pressure-setting
point hPa: 400
LDA-stroke mm: 2.8
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 42.30...43.30
1000S.: (38.80...46.80)

2nd speed 1/min: 2350
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 0.00...5.00
1000S.: (0.00...5.00)

5th speed 1/min: 2200
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 19.00...25.00
1000S.: (17.50...26.50)

8th speed 1/min: 2100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 39.00...47.00
1000S.: (37.00...49.00)

9th speed 1/min: 1900
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 47.50...52.50
1000S.: (46.50...53.50)

10th speed 1/min: 1750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 48.50...53.50
1000S.: (47.50...54.50)

11th speed 1/min: 1500
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm3/: 48.50...53.50
1000S.: (47.50...54.50)

12th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 49.00...50.00
1000S.: (46.00...53.00)
18th speed 1/min: 650
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 29.50...30.50
1000S.: (26.50...33.50)
20th speed 1/min: 650
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 46.00...55.00
1000S.: (45.00...56.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 375
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 375
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 13.00...17.00
1000S.: (11.00...19.00)

Dispersion cm³/: 6.0
1000S.: (6.5)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...5.00
1000S.: (0.00...5.00)

5th speed 1/min: 325
Del. quantity cm³/: 37.00...47.00
1000S.: (36.00...48.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1100
Charge press. hPa: 1000
Inj.-qty. cm³/: -25.0...-33.0
difference 1000S.: (-25.0...-33.0)
KSB/AFB

valve Volt: *
2nd speed 1/min: 1100
Charge press. hPa: 1000

Inj.-qty. cm³/: 24.50...26.50
difference 1000S.: (24.50...26.50)
KSB/AFB
valve Volt: '

Shutoff
electromagnet Volt: 12
Shutoff
electromagnet Volt: 12
5th speed 1/min: 1100
Charge press. hPa: 1000
Inj.-qty. cm³/: 2.00...8.00 Z
difference 1000S.: (2.00...8.00) Z
KSB/AFB
valve Volt: #
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1100
Charge press. hPa: 1000
TD-travel : -0.40...-0.60
difference mm: (-0.40...-0.60)
KSB/AFB
valve Volt: *

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1100
Charge press. hPa: 1000
TD-travel : -0.40...-1.20
difference mm: (-0.40...-1.20)
KSB/AFB
valve Volt: #
Shutoff
electromagnet Volt: 12

SP press.-dif.measurement:
pompa di mandata (FP):
1st speed 1/min: 1100
Charge press. hPa: 1000
Supply pump-
pressure : -0.10...-0.30
difference bar: (-0.10...-0.30)
KSB/AFB
valve Volt: '
Shutoff
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 42.00...78.00
1000S.: (42.00...78.00)

2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12

Del. quantity cm³/: 12.00...48.00
1000S.: (12.00...48.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm³/: 40.00...80.00
1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4

KF mm: KOT

MS mm: 0.6...1.0

SVS max. mm: 2.5

LDA stroke mm: 2.8

XK mm: 20.0...22.0

XL mm: 12.6...16.0

Ya mm: 36.9...40.9

Yb mm: 42.8...48.2

Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut

Always pay attention to test
instructions for DISTRIBUTOR-TYPE
INJECTION PUMPS FOR DI ENGINES!

Information additionally
required for testing fuel-injection
pump:

TEST PREREQUISITES

Calibrating-oil return temperature with
thermometer, °C :45

Calibrating-oil inlet
temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500

Temperature stabilisation

speed 1/min :2200

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :2200

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :2200/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F
Edition : 02.08.93
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE4/11F1900R522
Type number : 0 460 414 103
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.27.3700

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400
Charge press. hPa: 1200
Setting value mm: 2.90...3.10

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 1200
Setting value bar: 6.60...7.20
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1200
Del. quantity cm3/
1000S.: 50.50...51.50

Shutoff
electromagnet Volt: 12
Dispersion cm3/
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm3/
1000S.: 27.00...28.00

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm3/
1000S.: 8.00...12.00

Shutoff
electromagnet Volt: 12
Del. quantity cm3/
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2100
Charge press hPa: 1200
Del. quantity cm3/
1000S.: 33.00...37.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm3/
mind 1000S.: 40.00

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1400
Charge press hPa: 1200
Inj.-qty. cm³/
difference 1000S.: -19.00..21.00 #
Shutoff
electromagnet Volt: 12
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1400
Charge press hPa: 1200
Supply pump
pressure
difference bar: - 0.10..0.30#
Shutoff
electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1900
Charge press hPa: 1200
TD travel mm: 5.30...5.90
mm: (4.90...6.30)

Shutoff
electromagnet Volt: 12
3rd speed 1/min: 1750
Charge press hPa: 1200
TD travel mm: 5.30...5.90
mm: (4.90...6.30)

Shutoff
electromagnet Volt: 12
4th speed 1/min: 1400
Charge press hPa: 1200
TD travel mm: 2.90...3.10
mm: (2.30...3.70)

Shutoff
electromagnet Volt: 12
5th speed 1/min: 1250
Charge press. hPa: 1200
TD travel mm: 1.60...2.20
mm: (1.20...2.60)

Shutoff
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
Charge press. hPa: 1200
Supply-pump
pressure bar: 3.80...4.40
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1400
Charge press. hPa: 1200
Supply-pump
pressure bar: 6.60...7.20
Shutoff
electromagnet Volt: 12

3rd speed 1/min: 1900
Charge press. hPa: 1200
Supply-pump
pressure bar: 8.70...9.30
Shutoff
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
Charge press. hPa: 1200
Shutoff
electromagnet Volt: 12
Overflow : 75.00...119.50
quantity cm³/10s: (60.00...134.50)
2nd speed 1/min: 1900
Charge press. hPa: 1200
Shutoff
electromagnet Volt: 12
Overflow : 97.30...180.70
quantity cm³/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800
Charge-air pressure-setting
point hPa: 600
LDA-stroke mm: 6.2
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 45.50...46.50
1000S.: (42.00...50.00)
2nd speed 1/min: 2300
Charge press. hPa: 1200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 2100
Charge press. hPa: 1200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 33.00...37.00
1000S.: (30.50...39.50)
5th speed 1/min: 2000
Charge press. hPa: 1200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 43.00...51.00
1000S.: (41.00...53.00)
9th speed 1/min: 1900
Charge press. hPa: 1200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 48.50...53.50
1000S.: (47.50...54.50)
12th speed 1/min: 1750
Charge press. hPa: 1200

Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 50.50...51.50
 1000S.: (47.50...54.50)
 13th speed 1/min: 1000
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 45.00...50.00
 1000S.: (43.50...51.50)
 14th speed 1/min: 800
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 27.50...32.50
 1000S.: (26.50...33.50)
 15th speed 1/min: 800
 Charge press. hPa: 1200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 45.50...54.50
 1000S.: (44.50...55.50)
 18th speed 1/min: 550
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 27.00...28.00
 1000S.: (23.00...31.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 325
 Charge press. hPa: -
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Shutoff
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 325
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 8.00...12.00
 1000S.: (6.00...14.00)

Dispersion cm³/: 6.0
 1000S.: (6.5)

2nd speed 1/min: 425
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: (0.00...3.00)

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1400
 Charge press. hPa: 1200

Inj.-qty. cm³/ : -19.0..25.0 "
 difference 1000S.: -(18.0..26.0) "
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1400
 Charge press. hPa: 1200
 Inj.-qty. cm³/: 0.0..3.00 ' z
 difference 1000S.: -
 Shutoff
 electromagnet Volt: 12

TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 1400
 Charge press. hPa: 1200
 TD-travel : -0.7...0.90 "
 difference mm: -
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1400
 Charge press. hPa: 1200
 TD-travel : -1.0...1.80 '
 difference mm: -

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1400

Automatic starting fuel delivery:

1st speed 1/min: 200
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 55.00...105.00
 1000S.: (55.00...105.00)

2nd speed 1/min: 500
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 14.00...30.00
 1000S.: (14.00...30.00)

4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 40.00...90.00
 1000S.: (40.00...90.00)

Shutoff electromagnet:

Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation
 K mm: K1
 KF mm: -
 MS mm: -
 SVS max. mm: -

LDA stroke mm: 6.2
Ya mm: 37.9...39.9
Yb mm: 44.3...50.1

Remarks:

Z = Absolute delivery

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation

speed 1/min :2100

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799

Temperature stabilisation

speed 1/min :2100

Output temperature, °C :48

Measurement temperature, °C:46

Test speed, 1/min :800...1199

Temperature stabilisation

speed 1/min :2100/100

Output temperature, °C :45

Measurement temperature, °C:45

Test speed, 1/min :1200...1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :42

Measurement temperature, °C:44

Test speed, 1/min : 1700

Temperature stabilisation

speed 1/min :100

Output temperature, °C :41

Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF
Edition : 02.08.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE4/11F1900R535
Type number : 0 460 414 104
Customer Part-No. :

Customer-specific information
Customer : IVECO-SOFIM

Engine : 8140.47.2210

Power KW: -
Speed 1/min: 83

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1400

E06

Charge press. hPa: 1000
Setting value mm: 2.40...2.60
Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1400
Charge press hPa: 1000
Setting value bar: 6.40...7.00
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 60.50...61.50
Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 550
Del. quantity cm³/
1000S.: 23.00...24.00
Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm³/
1000S.: 10.00...14.00
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 2175
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 25.00...31.00
Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 40.00...90.00
mind 1000S.: 40.00
Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1400
 Charge press hPa: -
 Inj.-qty. cm3/
 difference 1000s.: -15.5...17.5 #
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 1400
 Charge press hPa: -
 Supply pump
 pressure
 difference bar: - 0.1...0.3 #
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1600
 Charge press hPa: 1000
 TD travel mm: 3.50...4.10
 mm: (3.10...4.50)

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1400
 Charge press hPa: 1000
 TD travel mm: 2.40...2.60
 mm: (1.80...3.20)

Shutoff
 electromagnet Volt: 12
 4th speed 1/min: 1250
 Charge press hPa: 1000
 TD travel mm: 1.20...1.80
 mm: (0.80...2.20)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 1900
 Charge press. hPa: 1000
 TD travel mm: 4.60...5.20
 mm: (4.20...5.60)

Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 800
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.20...4.80
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 1400
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 6.40...7.00

Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1900
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 8.10...8.70
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 800
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 75.00...119.50
 quantity cm3/10s: (60.00...134.50)
 2nd speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 97.30...180.70
 quantity cm3/10s: (82.30...195.70)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800
 Charge-air pressure-setting
 point hPa: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 48.50...49.50
 1000s.: (45.00...53.00)

2nd speed 1/min: 2325
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 0.00...3.00
 1000s.: (0.00...3.00)

3rd speed 1/min: 2175
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 25.00...31.00
 1000s.: (23.50...32.50)

Shutoff
 electromagnet Volt: 12
 5th speed 1/min: 2100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 38.00...46.00
 1000s.: (36.00...48.00)

9th speed 1/min: 1900
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm3/: 58.50...63.50
 1000s.: (57.50...64.50)

12th speed 1/min: 1750
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 60.50...61.50
1000S.: (57.50...64.50)
15th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.50...60.50
1000S.: (54.00...62.00)
16th speed 1/min: 800
Charge press. hPa: 1000
Shutoff
electromagnet volt: 12
Del. quantity cm³/: 54.00...63.00
1000H.: (53.00...64.00)
18th speed 1/min: 550
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 23.00...24.00
1000S.: (20.00...27.00)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 325
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)
Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 325
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 10.00...14.00
1000S.: (8.00...16.00)
Dispersion cm³/: 6.0
1000S.: (6.5)
2nd speed 1/min: 450
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1400
Charge press. hPa: -
Inj.-qty. cm³/ : -16.0..22.0 "
difference 1000S.: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1400

Charge press. hPa: -
Inj.-qty. cm³/: 2.00..8.00 'Z
difference 1000S.: -
Shutoff
electromagnet Volt: 12

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1400
Charge press. hPa: -
TD-travel : -0.8...0.9 "
difference mm: -
Shutoff
electromagnet Volt: 12
2nd speed 1/min: 1400
Charge press. hPa: -
TD-travel : - 1.0..1.8 '
difference mm: -
Shutoff
electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.
terza fermo della portata
stop (EGR set)
scarico) (ARF)
gaz d'échappement-ARF)
Spacing mm: 12.0

1st speed 1/min: 1200
Charge press. hPa: -
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 17.00...19.00
1000S.: (15.50...20.50)

Automatic starting fuel delivery:

1st speed 1/min: 200
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 55.00...105.00
1000S.: (55.00...105.00)

2nd speed 1/min: 500
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 14.00...30.00
1000S.: (14.00...30.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 40.00...90.00
1000S.: (40.00...90.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: K1
KF mm: K-OT
MS1 mm: 1.4...1.6
Ya mm: 33.0...35.0
Yb mm: 46.4...52.4

Remarks:

⋮

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100

Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS FOR FUEL-INJECTION PUMP, delivery rates

Test speed, 1/min :<500

Temperature stabilisation speed 1/min :2100

Output temperature, °C :51

Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation speed 1/min :2100
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation speed 1/min :2100/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL
Edition : 10.93
replaces : 06.92
Calibrating oil : ISO-4113

Injection pump : VE6/11F1900L218-8
Type number : 0 460 416 065
Customer Part-No. :

Customer-specific information
Customer : PENTA

Engine : TAMD 41 B

Power KW: 132

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40...48
Electronically : 42...50

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): $\pm 0.02(0.04)$

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1200
Charge press. hPa: 1000
Setting value mm: 3.30...3.70

Supply-pump pressure

E10

Speed 1/min: 1200
Charge press hPa: 1000
Setting value bar: 5.90...6.50

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 98.00...99.00
Dispersion cm³/: 5.0
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650
Del. quantity cm³/
1000S.: 64.50...65.50

Low-idle speed regulation

Speed 1/min: 325
Del. quantity cm³/
1000S.: 25.00...29.00
Del. quantity cm³/: 3.5
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2050
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 37.00...41.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 80.00...120.00
mind 1000S.: 80.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

3rd speed 1/min: 1200
Charge press hPa: 1000
TD travel mm: 3.30...3.70
mm: (2.80...4.20)

4th speed 1/min: 800
Charge press hPa: 1000
TD travel mm: 1.00...2.00
mm: (0.80...2.20)

5th speed 1/min: 1900
Charge press. hPa: 1000
TD travel mm: 4.00...4.80
mm: (3.70...5.10)

7.Rotacao 1/min: 1000
Charge press. hPa: 1000

TD travel mm: 2.30...3.10
mm: (2.00...3.40)

Supply-pump pressure characteristic:

1st speed 1/min: 1900
Charge press. hPa: 1000
Supply-pump pressure bar: 7.40...8.00
2nd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump pressure bar: 5.90...6.50
3rd speed 1/min: 800
Charge press. hPa: 1000
Supply-pump pressure bar: 5.00...5.60

Overflow quantity at overflow valve:

1st speed 1/min: 650
Overflow quantity cm³/10s: 41.70...83.40
(26.70...98.40)
2nd speed 1/min: 1900
Charge press. hPa: 1000
Overflow quantity cm³/10s: 55.60...139.00
(40.60...153.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting point hPa: 200
LDA-stroke mm: 4.5
Del. quantity cm³/1000s.: 77.00...78.00
(70.50...84.50)
2nd speed 1/min: 2200
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
3rd speed 1/min: 2100
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 5.00...25.00
(5.00...25.00)
5th speed 1/min: 2050
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 37.00...41.00
(33.00...45.00)
9th speed 1/min: 1900
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 88.00...92.00
(86.00...94.00)
12th speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 98.00...99.00
(96.20...100.80)
14th speed 1/min: 800
Charge press. hPa: -

Del. quantity cm³/1000s.: 67.50...70.50
(67.50...70.50)
15th speed 1/min: 1200
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 98.50...102.50
(97.00...104.00)
18th speed 1/min: 650
Charge press. hPa: -
Del. quantity cm³/1000s.: 64.50...65.50
(62.00...68.00)
20th speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 87.00...93.00
(86.00...94.00)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1900
Charge press. hPa: 1000
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Electr. shutoff:

1st speed 1/min: 325
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)

Shutoff electromagnet volt: 12

Idle delivery:

1st speed 1/min: 325
Del. quantity cm³/1000s.: 25.00...29.00
(22.00...32.00)
Dispersion cm³/1000s.: 5.0
(5.0)
2nd speed 1/min: 480
Del. quantity cm³/1000s.: 0.00...3.00
(0.00...3.00)
3rd speed 1/min: 400
Del. quantity cm³/1000s.: 5.00...11.00
(3.50...12.50)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del. quantity cm³/1000s.: 70.00...100.00
(70.00...100.00)
2nd speed 1/min: 500
Del. quantity cm³/1000s.: 50.00...70.00
(50.00...70.00)
4th speed 1/min: 100
Del. quantity cm³/1000s.: 80.00...120.00
(80.00...120.00)

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: 0.6...1.0
LDA stroke	mm: 4.5
XK	mm: 21.8...23.8
XL	mm: 11.2...14.6
Ya	mm: 37.2...39.2
Yb	mm: 53.1...60.9

Remarks:

:
Operate control lever after each
manifold-pressure compensator pressure
change.

* Correction at adjusting nut

Overflow restriction 0.55 mm - Part No.
..303

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
 Edition : 20.09.93
 replaces : -
 Calibrating oil : ISO-4113
 Injection pump : VE6/11F1350R562
 Type number : 0 460 416 076
 Customer Part-No. :

Customer-specific information
 Customer : MAN

Engine : D 0826 OH 03

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 109

Opening
 Pressure bar: 207.00...210.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.55
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Setting value mm: 1.30...1.70

Supply-pump pressure

Speed 1/min: 1000
 Setting value bar: 6.2...6.8

Full-load del. w/out charge press.:

Speed 1/min: 1000
 Del. quantity cm³/
 1000S.: 78.50...79.50
 Dispersion cm³/: 4.0
 1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm³/
 1000S.: 7.00...13.00
 Del. quantity cm³/: 6.0
 1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1420
 Del. quantity cm³/
 1000S.: 57.00...63.00

Start:

Speed 1/min: 100
 Del. quantity cm³/: 56.0...58.0
 mind 1000S.: -

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900
 TD travel mm: 0.40...1.20
 mm: (0.10...1.50)
 2nd speed 1/min: 1000
 TD travel mm: 1.30...1.70
 mm: (0.80...2.20)
 3rd speed 1/min: 1350
 TD travel mm: 3.60...4.40
 mm: -

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Supply-pump
 pressure bar: 4.40...5.00
 2nd speed 1/min: 1000
 Supply-pump
 pressure bar: 6.20...6.80
 3rd speed 1/min: 1350
 Supply-pump
 pressure bar: 7.80...8.40

Overlow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1350
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550
Del. quantity cm³/: 0.00...3.00
1000S.: -
3rd speed 1/min: 1500
Del. quantity cm³/: ... 15.0
1000S.: -
4th speed 1/min: 1450
Del. quantity cm³/: 15.00...55.00
1000S.: -
5th speed 1/min: 1420
Del. quantity cm³/: 57.00...63.00
1000S.: (53.50...66.50)
6th speed 1/min: 1350
Del. quantity cm³/: 73.50...76.50
1000S.: (72.00...78.00)
7th speed 1/min: 1000
Del. quantity cm³/: 78.50...79.50
1000S.: (76.50...81.50)
8th speed 1/min: 850
Del. quantity cm³/: 76.00...80.00
1000S.: (74.50...81.50)
9th speed 1/min: 600
Del. quantity cm³/: 52.10...59.10
1000S.: (51.10...60.10)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1350
Del. quantity cm³/: 0.00...3.00
1000S.: -

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/: 7.00...13.00
1000S.: (4.50...15.50)
Dispersion cm³/: 6.0
1000S.: (6.5)
2nd speed 1/min: 450
Del. quantity cm³/: 0.00...3.00
1000S.: -

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³/: 55.0...75.00
1000S.: -

2nd speed 1/min: 500
Del. quantity cm³/: 45.0...65.0
1000S.: -

4th speed 1/min: 100
Del. quantity cm³/: 56.0...58.0
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation
K mm: -
KF mm: 5.0...5.4
MS mm: -
Ya mm: 37.4...40.4
Yb mm: 42.8...48.2

Remarks:

:
:
Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 20.09.93
replaces : -
Calibrating oil : ISG-4113

Injection pump : VE6/12F130DR436
Type number : 0 460 426 188
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 TOH

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 110

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): $\pm 0.02(0.04)$

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
Charge press. hPa: 1000
Setting value mm: 2.80...3.20

Supply-pump pressure

Speed 1/min: 1000
Charge press hPa: 1000
Setting value bar: 8.1...8.7

Full-load del. with charge press.:

Speed 1/min: 1000
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 84.50...85.50
Dispersion cm³/: 3.5
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 57.50...58.50

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 7.00...13.00
Del. quantity cm³/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1400
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 70.00...76.00

Start:

Speed 1/min: 100
Del. quantity cm³/: -
mind 1000S.: 50.00

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 1000
Charge press hPa: 1000
Inj.-qty. cm³/
difference 1000S.: -12.5...14.50 #
SP press.-dif.measurement
pompa di mandata (FP)
1.Speed 1/min: 1000
Charge press hPa: 1000
Supply pump
pressure
difference bar: - 0.1..0.30 #

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900
 Charge press hPa: 1000
 TD travel mm: 1.50...2.30
 mm: (1.20...2.60)
 2nd speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 2.80...3.20
 mm: (2.30...3.70)
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 3.50...4.30
 mm: (3.20...4.60)

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.80...6.40
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump pressure bar: 8.10...8.70
 3rd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump pressure bar: 8.70...9.30

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: -
 Overflow quantity cm³/10s: 41.70...83.40
 mm: (26.70...98.40)
 2nd speed 1/min: 1300
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 55.60...139.00
 mm: (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600
 Charge-air pressure-setting point hPa: 300
 LDA-stroke mm: 7.3
 Del. quantity cm³/1000s.: 72.00...73.00
 mm: (70.00...75.00)
 2nd speed 1/min: 1650
 Charge press. hPa: 1000
 Del. quantity cm³/1000s.: 0.00...3.00
 mm: -
 3rd speed 1/min: 1630
 Charge press. hPa: 1000
 Del. quantity cm³/1000s.: ... 15.0
 mm: -
 4th speed 1/min: 1570
 Charge press. hPa: 1000

Del. quantity cm³/1000s.: 15.00...55.00
 mm: -
 5th speed 1/min: 1400
 Charge press. hPa: 1000
 Del. quantity cm³/1000s.: 70.00...76.00
 mm: (68.50...77.50)
 6th speed 1/min: 1300
 Charge press. hPa: 1000
 Del. quantity cm³/1000s.: 80.50...83.50
 mm: (78.00...86.00)
 7th speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/1000s.: 84.50...85.50
 mm: (82.50...87.50)
 8th speed 1/min: 800
 Charge press. hPa: 1000
 Del. quantity cm³/1000s.: 85.00...89.00
 mm: (83.00...91.00)
 9th speed 1/min: 600
 Charge press. hPa: 1000
 Del. quantity cm³/1000s.: 90.00...94.00
 mm: (86.00...98.00)
 10th speed 1/min: 600
 Charge press. hPa: -
 Del. quantity cm³/1000s.: 57.50...58.50
 mm: (55.50...60.50)

Mech. shutoff:
Mech. Abstellung:

1st speed 1/min: 1300
 Charge press. hPa: 1000
 Del. quantity cm³/1000s.: 0.00...3.00
 mm: -
 Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
 Del. quantity cm³/1000s.: 7.00...13.00
 mm: (4.50...15.50)
 Dispersion cm³/1000s.: 6.0
 mm: (6.5)
 2nd speed 1/min: 400
 Del. quantity cm³/1000s.: 0.00...3.00
 mm: -

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

1st speed 1/min: 1000
 Charge press. hPa: 1000
 Inj.-qty. cm³ difference 1000s.: -23.5...31.5 "
 mm: -
 2nd speed 1/min: 1000
 Charge press. hPa: 1000
 Inj.-qty. cm³ difference 1000s.: "Z" 2.0..8.0"
 mm: -

Z = Absolute delivery

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : -0.7...0.9 "
difference mm: -
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : "Z" 0.1..0.9'
difference mm: -

Automatic starting fuel delivery:

1st speed 1/min: 400
Del. quantity cm³/: 75.0 ...
1000S.: -

2nd speed 1/min: 500
Del. quantity cm³/: ... 75.0
1000S.: -

4th speed 1/min: 100
Del. quantity cm³/: 50.0 ...
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation

K mm: -
KF mm: K-OT
MS mm: 0.8...1.2
SVS max. mm: 1.9
LDA stroke mm: 7.3
Ya mm: 37.4...40.4
Yb mm: 41.0...46.4

Remarks:

⋮

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL
Edition : 10.93
replaces : 02.93
Calibrating oil : ISO-4113

Injection pump : VE6/12F1950L448
Type number : 0 460 426 193
Customer Part-No. :

Customer-specific information
Customer : PENTA

Engine : TD 42 A

Power kW: 170

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 344

Calibrating-oil
return temp. °C
with thermometer : 44.00...46.00
Electronically : -

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 901 073

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 450

Start of delivery
Prestroke mm: 0.3
(from BDC): ±0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500
Charge press. hPa: 1500
Setting value mm: 2.80...3.20

Supply-pump pressure

Speed 1/min: 1500
Charge press hPa: 1500
Setting value bar: 8.2...8.8

Full-load del. with charge press.:

Speed 1/min: 1800
Charge press. hPa: 1500
Del. quantity cm³/
1000S.: 130.7...131,7
Dispersion cm³/: 5.0

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm³/
1000S.: 58,50...59.50

Low-idle speed regulation

Speed 1/min: 400
Del. quantity cm³/
1000S.: 17.00...21.00
Del. quantity cm³/: 5.0
1000S.: -

Full-load speed regulation

Speed 1/min: 2150
Charge press hPa: 800
Del. quantity cm³/
1000S.: 24.00...30.00

Start:

Speed 1/min: 100
Del. quantity cm³/: 80.00...140.00
mind 1000S.: 80.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1100
Charge press hPa: 1500
TD travel mm: 1.00...2.00
mm: (0.60...2.40)

2nd speed 1/min: 1500
Charge press hPa: 1500
TD travel mm: 2.80...3.20
mm: (2.30...3.70)

3rd speed 1/min: 1900
Charge press hPa: 1500
TD travel mm: 4.50...5.30
mm: (4.00...5.80)

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1500
 Supply-pump pressure bar: 5.30...5.90
 2nd speed 1/min: 1100
 Charge press. hPa: 1500
 Supply-pump pressure bar: 7.00...7.60
 3rd speed 1/min: 1500
 Charge press. hPa: 1500
 Supply-pump pressure bar: 8.20...8.80
 4th speed 1/min: 1900
 Charge press. hPa: 1500
 Supply-pump pressure bar: 9.30...9.90

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: 1500
 Overflow quantity cm³/10s: 75.00...119.40
 (60.00...134.40)
 2nd speed 1/min: 1950
 Charge press. hPa: 1500
 Overflow quantity cm³/10s: 97.20...180.50
 (82.20...195.50)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
 Charge-air pressure-setting point hPa: 700*
 LDA-stroke mm: 7.5
 Del. quantity cm³/1000s.: 89.50...90.50
 (84.00...96.00)
 2nd speed 1/min: 2300
 Charge press. hPa: 1500
 Del. quantity cm³/1000s.: 0.00...3.00
 -
 3rd speed 1/min: 2150
 Charge press. hPa: 1500
 Del. quantity cm³/1000s.: 24.00...30.00
 (21.00...33.00)
 4th speed 1/min: 2050
 Charge press. hPa: 1500
 Del. quantity cm³/1000s.: 101.00...115.00
 (94.00...122.00)
 5th speed 1/min: 1950
 Charge press. hPa: 1500
 Del. quantity cm³/1000s.: 124.00...128.00
 (123.00...129.00)
 6th speed 1/min: 1800
 Charge press. hPa: 1500
 Del. quantity cm³/1000s.: 130.70...131.70
 (129.20...133.20)
 7th speed 1/min: 1500
 Charge press. hPa: 1500

Del. quantity cm³/1000s.: 135.00...140.00
 (134.00...141.00)
 8th speed 1/min: 1100
 Charge press. hPa: 1500
 Del. quantity cm³/1000s.: 84.50...88.50
 (83.00...90.00)
 9th speed 1/min: 900
 Charge press. hPa: 1500
 Del. quantity cm³/1000s.: 123.50...128.50
 (122.50...129.50)
 10th speed 1/min: 600
 Charge press. hPa: 1500
 Del. quantity cm³/1000s.: 117.00...121.00
 (115.00...123.00)
 11th speed 1/min: 600
 Charge press. hPa: -
 Del. quantity cm³/1000s.: 58.50...59.50
 (57.00...61.00)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1950
 Charge press. hPa: 1500
 Del. quantity cm³/1000s.: 0.00...3.00
 -

Electr. shutoff:

1st speed 1/min: 400
 Charge press. hPa: -
 Del. quantity cm³/1000s.: 0.00...3.00
 -

Shutoff electromagnet volt: 12.0

Idle delivery:

1st speed 1/min: 400
 Del. quantity cm³/1000s.: 17.00...21.00
 (15.00...23.00)
 Dispersion cm³/1000s.: 5.0
 -
 2nd speed 1/min: 550
 Del. quantity cm³/1000s.: 0.0...3.0
 -
 3rd speed 1/min: 450
 Del. quantity cm³/1000s.: 6.00...12.00
 (4.00...14.00)

Automatic starting fuel delivery:

1st speed 1/min: 300
 Del. quantity cm³/1000s.: 60.00...90.00
 -
 2nd speed 1/min: 100
 Del. quantity cm³/1000s.: 80.00...140.00
 -

Shutoff electromagnet:

Cut-in
min voltage : 10.0
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: -
SVS max.	mm: 2,6
LDA stroke	mm: 7.5
Ya	mm: 37.2...39.2
Yb	mm: 53.4...61.4

Remarks:

:
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Always pay attention to test instructions for DISTRIBUTOR-TYPE INJECTION PUMPS FOR DI ENGINES!

Information additionally required for testing fuel-injection pump:

TEST PREREQUISITES

Calibrating-oil return temperature with thermometer, °C :45

Calibrating-oil inlet temperature, °C :35...40

Dwell speed, 1/min :1100
Feedback voltage, mV :-

SETTINGS/TEST SPECIFICATIONS
FOR FUEL-INJECTION PUMP,
delivery rates

Test speed, 1/min :<500
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :51
Measurement temperature, °C:49

Test speed, 1/min :500...799
Temperature stabilisation
speed 1/min :2100
Output temperature, °C :48
Measurement temperature, °C:46

Test speed, 1/min :800...1199
Temperature stabilisation
speed 1/min :2100/100
Output temperature, °C :45
Measurement temperature, °C:45

Test speed, 1/min :1200...1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :42
Measurement temperature, °C:44

Test speed, 1/min : 1700
Temperature stabilisation
speed 1/min :100
Output temperature, °C :41
Measurement temperature, °C:43

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
 Edition : 20.09.93
 replaces : -
 Calibrating oil : ISO-4113
 Injection pump : VE6/12F1200R307-4
 Type number : 0 460 426 202
 Customer Part-No. :

Customer-specific information
 Customer : MAN

Engine : D 0826 LOH 02

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 110

Opening
 Pressure bar: 250.00...253.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: 0.2
 (from BDC): +0.02(0.04)

Injection-pump setting values
 Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Charge press. hPa: 1000
 Setting value mm: 2.90...3.30

Supply-pump pressure

Speed 1/min: 1000
 Charge press hPa: 1000
 Setting value bar: 7.9...8.5

Full-load del. with charge press.:

Speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm3/
 1000S.: 90.00...91.00
 Dispersion cm3/: 4.0
 1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
 Del. quantity cm3/
 1000S.: 60.00...61.00

Low-idle speed regulation

Speed 1/min: 300
 Del. quantity cm3/
 1000S.: 6.50...13.50
 Del. quantity cm3/: 6.0
 1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1320
 Charge press hPa: 1000
 Del. quantity cm3/
 1000S.: 67.00...73.00

Start:

Speed 1/min: 100
 Del. quantity cm3/: 60.00...100.00
 mind 1000S.: 80.00

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1000
 Charge press hPa: 1000
 Inj.-qty. cm3/
 difference 1000S.: - 7.5...9.50 #
 SP press.-dif.measurement
 pompa di mandata (FP)

1.Speed 1/min: 1000
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: - 0.0..0.20 #

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
 Charge press hPa: 1000
 TD travel mm: 0.30...1.10
 mm: (0.00...1.40)
 2nd speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 2.90...3.30
 mm: (2.40...3.80)
 3rd speed 1/min: 1100
 Charge press hPa: 1000
 TD travel mm: 3.80...4.60
 mm: (3.50...4.90)
 4th speed 1/min: 1200
 Charge press hPa: 1000
 TD travel mm: 4.50...5.30
 mm: -

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump pressure bar: 5.30...5.90
 2nd speed 1/min: 800
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.60...7.20
 3rd speed 1/min: 1000
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.90...8.50

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: -
 Overflow quantity cm³/10s: 41.70...83.40
 (26.70...98.40)
 2nd speed 1/min: 1200
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 55.60...139.00
 (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600
 Charge-air pressure-setting point hPa: 400
 LDA-stroke mm: 6.2
 Del. quantity cm³/1000S.: 81.00...82.00
 (79.00...84.00)
 2nd speed 1/min: 1550
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 0.00...3.00
 -
 3rd speed 1/min: 1490
 Charge press. hPa: 1000

Del. quantity cm³/1000S.: ... 15.0
 -
 4th speed 1/min: 1440
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 15.00...45.00
 -
 5th speed 1/min: 1320
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 67.00...73.00
 (65.50...74.50)
 6th speed 1/min: 1200
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 86.00...91.00
 (84.50...92.50)
 7th speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 90.00...91.00
 (88.00...93.00)
 8th speed 1/min: 800
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 91.00...96.00
 (89.50...97.50)
 9th speed 1/min: 600
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 93.50...102.50
 (92.00...104.00)
 10th speed 1/min: 600
 Charge press. hPa: -
 Del. quantity cm³/1000S.: 60.00...61.00
 (58.00...63.00)

Mech. shutoff:
 Mech. Abstellung:

1st speed 1/min: 1200
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 0.00...3.00
 -
 Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 300
 Del. quantity cm³/1000S.: 6.50...13.50
 (4.50...15.50)
 Dispersion cm³/1000S.: 6.0
 (6.5)
 2nd speed 1/min: 400
 Del. quantity cm³/1000S.: 0.00...3.00
 -

Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

1st speed 1/min: 1000
 Charge press. hPa: 1000
 Inj.-qty. cm³/1000S.: -13.0...21.5 "
 -
 2nd speed 1/min: 1000

Charge press. hPa: 1000
Inj.-qty. cm³/: "Z" 2.0..8.0'
difference 1000S.: -

TD-travel dif.measurement:
correttore anticipo iniezione (SV):
1st speed 1/min: 1000
TD-travel : -0.3...0.5 "
difference mm: -
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD-travel : "Z" 0.0..1.4'
difference mm: -

Z = Absolute delivery

Automatic starting fuel delivery:

1st speed 1/min: 410
Del. quantity cm³/: 80.0...120.0
1000S.: -

2nd speed 1/min: 510
Del. quantity cm³/: 40.0...80.0
1000S.: -

4th speed 1/min: 100
Del. quantity cm³/: 60.0...100.0
1000S.: -

Shutoff electromagnet:

Cut-in
min voltage : -
Rated voltage : -

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: K-OT
MS	mm: 1.1...1.3
SVS max.	mm: 0,6
LDA stroke	mm: 6.2
Ya	mm: 37.4...40.4
Yb	mm: 41.3...46.7

Remarks:

⋮

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CDC
 Edition : 10.93
 replaces : 06.93
 Calibrating oil : ISO-4113
 Injection pump : VE6/12F1250R498-1
 Type number : 0 460 426 212
 Customer Part-No. :

Customer-specific information
 Customer : CDC

Engine : 6 BTAA 5.9B

Power KW: 100
 Speed 1/min: 1250

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
 return temp. °C
 with thermometer : 40.00...48.00
 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
 assembly : 1 688 901 109

Opening
 Pressure bar: 207.00...210.00

Perforated-plate
 diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
 x Wall thickness : 2.00
 x Length mm: 840

Start of delivery
 Prestroke mm: -
 (from BDC): -

Start of delivery block
 Piston stroke mm: 1.15
 mm: ±0.02(0.06)

Outlet : D

Injection-pump setting values

Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000
 Charge press. hPa: 1000
 Setting value mm: 1.50...1.90
 Shutoff
 electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000
 Charge press hPa: 1000
 Setting value bar: 6.30...6.90
 Shutoff
 electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 850
 Charge press. hPa: 1000
 Del. quantity cm³/
 1000S.: 71.50...72.50
 Shutoff
 electromagnet Volt: 24
 Dispersion cm³/: 5.0
 1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 500
 Del. quantity cm³/
 1000S.: 59.50...60.50
 Shutoff
 electromagnet Volt: 24
 Dispersion cm³/: 5.0
 1000S.: (6.0)

Low-idle speed regulation

Speed 1/min: 350
 Del. quantity cm³/
 1000S.: 11.00...15.00
 Shutoff
 electromagnet Volt: 24
 Del. quantity cm³/: 5.5
 1000S.: (7.0)

Full-load speed regulation

Speed 1/min: 1400
 Charge press hPa: 1000
 Del. quantity cm³/
 1000S.: 42.00...48.00
 Shutoff
 electromagnet Volt: 24

Start:

Speed 1/min: 100
Del. quantity cm³/: 100.00...160.00
mind 1000S.: 100.0
Shutoff
electromagnet Volt: 24

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 2.10...2.90
mm: (1.80...3.20)

Shutoff
electromagnet Volt: 24
3rd speed 1/min: 1000
Charge press hPa: 1000
TD travel mm: 1.50...1.90
mm: (1.00...2.40)

Shutoff
electromagnet Volt: 24
7.Rotacao 1/min: 850
Charge press. hPa: 1000
TD travel mm: 0.50...1.30
mm: (0.20...1.60)

Shutoff
electromagnet Volt: 24
8th speed 1/min: 450
Charge press. hPa: -
TD travel mm: 2.00...3.00
mm: (1.80...3.20)

KSB/AFB
valve Volt: 24
Shutoff
electromagnet Volt: 24

Supply-pump pressure characteristic:

1st speed 1/min: 850
Charge press. hPa: 1000
Supply-pump
pressure bar: 5.70...6.30
Shutoff

electromagnet Volt: 24
2nd speed 1/min: 1000
Charge press. hPa: 1000
Supply-pump
pressure bar: 6.30...6.90
Shutoff

electromagnet Volt: 24
3rd speed 1/min: 1250
Charge press. hPa: 1000
Supply-pump
pressure bar: 7.20...7.80
Shutoff

electromagnet Volt: 24
4th speed 1/min: 500
Charge press. hPa: 1000

Supply-pump
pressure bar: 3.90...4.50
Shutoff
electromagnet Volt: 24

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Overflow : 41.70...83.40
quantity cm³/10s: (26.70...98.40)
2nd speed 1/min: 1250
Charge press. hPa: 1000

Shutoff
electromagnet Volt: 24
Overflow : 55.60...139.00
quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 600
Charge-air pressure-setting
point hPa: 450
LDA-stroke mm: 4.0
Shutoff

electromagnet Volt: 24
Del. quantity cm³/: 68.00...69.00
1000S.: (64.50...72.50)

2nd speed 1/min: 1490
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

3rd speed 1/min: 1445
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 15.00...45.00
1000S.: (15.00...45.00)

5th speed 1/min: 1400
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 42.00...48.00
1000S.: (39.00...51.00)

9th speed 1/min: 1250
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 73.00...77.00
1000S.: (72.00...78.00)

10th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 72.50...75.50
1000S.: (70.50...77.50)
12th speed 1/min: 850
Charge press. hPa: 1000
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 71.50...72.50
1000S.: (69.00...75.00)
18th speed 1/min: 500
Charge press. hPa: -
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 59.50...60.50
1000S.: (56.00...64.00)

Mech. shutoff:
Mech. Abststellung:

1st speed 1/min: 1250
Charge press. hPa: 1000
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 350
Charge press. hPa: -
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Shutoff
electromagnet volt: -

Idle delivery:

1st speed 1/min: 350
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 11.00...15.00
1000S.: (8.00...18.00)

Dispersion cm³/: 5.5
1000S.: (7.0)

2nd speed 1/min: 400
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 0.00...3.00
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 105.00...165.00
1000S.: (105.00...165.00)

2nd speed 1/min: 200
Shutoff
electromagnet Volt: 24

Del. quantity cm³/: 55.00...85.00
1000S.: (55.00...85.00)

4th speed 1/min: 100
Shutoff
electromagnet Volt: 24
Del. quantity cm³/: 100.00...160.00
1000S.: (100.00...160.00)

Shutoff electromagnet:

Cut-in
min voltage : 20.0
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: 3.6...3.8
KF	mm: KOT
MS	mm: -
SYS max.	mm: 3.7
LDA stroke	mm: 4.0
Ya	mm: 34.8...38.8
Yb	mm: 44.9...50.1

Remarks:

: CDC # 328 1848
Operate control lever after each manifold-pressure compensator pressure change.

* Correction at adjusting nut

Ya = Distance between VE flange and speed-control lever in idle position
Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position
Measurement point = edge of control lever on distributor-head end

Permissible port/port scatter with stop test, mechanical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 20.09.93
replaces : -
Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R543
Type number : 0 460 426 222
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 LE 521

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 110

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 900
Charge press. hPa: 1000
Setting value mm: 2.10...2.50

Shutoff
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900
Charge press hPa: 1000
Setting value bar: 6.9...7.5
Shutoff
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm³/
1000S.: 105.5...106.5

Shutoff
electromagnet Volt: 12
Dispersion cm³/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500
Del. quantity cm³/
1000S.: 62.50...63.50

Shutoff
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 300
Del. quantity cm³/
1000S.: 7.50...13.50

Shutoff
electromagnet Volt: 12
Del. quantity cm³/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1250
Charge press hPa: 1000
Del. quantity cm³/
1000S.: 53.00...57.00

Shutoff
electromagnet Volt: 12

Start:

Speed 1/min: 100
Del. quantity cm³/: 80.00...140.00
mind 1000S.: -

Shutoff
electromagnet Volt: 12

Load-dependent start of delivery:
Inj.-qty.dif.measurement:

Speed 1/min: 900
 Charge press hPa: 1000
 Inj. qty. cm³/
 difference 1000s.: - 19.0..21.0 #
 Shutoff
 electromagnet Volt: 12
 SP press.-dif.measurement
 pompa di mandata (FP)
 1.Speed 1/min: 900
 Charge press hPa: 1000
 Supply pump
 pressure
 difference bar: - 0.1...0.3 #
 Shutoff
 electromagnet Volt: 12

Inspection-pump test specifications
 Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
 Charge press hPa: 1000
 TD travel mm: 0.50...1.30
 mm: (0.20...1.40)
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Charge press hPa: 1000
 TD travel mm: 2.10...2.50
 mm: (1.60...3.00)
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1000
 Charge press hPa: 1000
 TD travel mm: 2.10...2.90
 mm: (1.80...3.20)
 Shutoff
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 4.60...5.20
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 6.90...7.50
 Shutoff
 electromagnet Volt: 12
 3rd speed 1/min: 1100
 Charge press. hPa: 1000
 Supply-pump
 pressure bar: 8.00...8.60
 Shutoff
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500
 Charge press. hPa: -
 Shutoff
 electromagnet Volt: 12
 Overflow : 41.70...83.40
 quantity cm³/10s: (26.70...98.40)
 2nd speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Overflow : 55.60...139.00
 quantity cm³/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 500
 Charge-air pressure-setting
 point hPa: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 91.50...92.50
 1000s.: (88.00...96.00)
 2nd speed 1/min: 1350
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000s.: -
 3rd speed 1/min: 1320
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: ... 15.0
 1000s.: -
 4th speed 1/min: 1270
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 15.00...55.00
 1000s.: -
 5th speed 1/min: 1250
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 53.00...57.00
 1000s.: (46.50...63.50)
 6th speed 1/min: 1100
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 94.50...99.50
 1000s.: (93.00...101.00)
 7th speed 1/min: 1000
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12

Del. quantity cm³/: 97.00...102.00
 1000S.: (95.50...103.50)
 8th speed 1/min: 600
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 106.00...111.00
 1000S.: (104.50...112.50)
 9th speed 1/min: 500
 Charge press. hPa: 1000
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 110.0...119.00
 1000S.: (108.50...120.50)
 KSB/AFB
 valve Volt: 500
 Timing valve Volt: -
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 62.50...63.50
 1000S.: (60.00...66.00)

 Mech. shutoff:
 Mech. Abst \ddot{u} llung:

 1st speed 1/min: 1100
 Charge press. hPa: 1000
 Del. quantity cm³/: 0.00...3.00
 1000S.: -
 Shutoff
 electromagnet volt: 12

 Electr. shutoff:

 1st speed 1/min: 300
 Charge press. hPa: -
 Del. quantity cm³/: 0.0...3.0
 1000S.: -
 Shutoff
 electromagnet volt: -

 Idle delivery:

 1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 6.50...13.50
 1000S.: (4.50...15.50)
 Dispersion cm³/: 6.0
 1000S.: (6.5)
 2nd speed 1/min: 400
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 0.00...3.00
 1000S.: -

 Load-dependent start of delivery:
 Inj.-qty.dif.measurement:

 1st speed 1/min: 900

Charge press. hPa: 1000
 Inj.-qty. cm³/ : - 10.0..40.0'
 difference 1000S.: -
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Charge press. hPa: 1000
 Inj.-qty. cm³/: "Z" 2.0..8.0'
 difference 1000S.: -
 Shutoff
 electromagnet Volt: 12

 TD-travel dif.measurement:
 correttore anticipo iniezione (SV):
 1st speed 1/min: 900
 Charge press. hPa: 1000
 TD-travel : - 0.9...1.1 "
 difference mm: -
 Shutoff
 electromagnet Volt: 12
 2nd speed 1/min: 900
 Charge press. hPa: 1000
 TD-travel : - 0.0...2.0'
 difference mm: -
 Shutoff
 electromagnet Volt: 12

 Automatic starting fuel delivery:

 1st speed 1/min: 350
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 90.0...130.0
 1000S.: -

 2nd speed 1/min: 450
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 30.0...90.0
 1000S.: -

 4th speed 1/min: 100
 Shutoff
 electromagnet Volt: 12
 Del. quantity cm³/: 80.0...140.0
 1000S.: -

 Shutoff electromagnet:

 Cut-in
 min voltage : 10.0
 Rated voltage : 12.0

 Mounting and assembly dimensions:

 Designation
 K mm: -
 KF mm: K-OT
 MS1 mm: 1.0...1.3
 Ya mm: 37.4...40.4

Yb

mm: 43.4...48.6

Remarks:

Ya = Distance between VE flange and speed-control lever in idle position

Measurement point = edge of control lever on drive end

Yb = Distance between VE flange and speed-control lever in rated speed position

Measurement point = edge of control lever on distributor-head end

Z = Absolute delivery

Permissible port/port scatter with stop test, electrical = max. 5.0 ccm/1000 S.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN
Edition : 20.09.93
replaces : -
Calibrating oil : ISO-4113
Injection pump : VE6/12F1200R563
Type number : 0 460 426 231
Customer Part-No. :

Customer-specific information
Customer : MAN

Engine : D 0826 LOH 06

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil
return temp. °C
with thermometer : 40.00...48.00
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder
assembly : 1 688 901 110

Opening
Pressure bar: 250.00...253.00

Perforated-plate
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00
x Wall thickness : 2.00
x Length mm: 840

Start of delivery
Prestroke mm: 0.2
(from BDC): +0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel

Speed 1/min: 850
Charge press. hPa: 1000
Setting value mm: 2.00...2.40

Supply-pump pressure

Speed 1/min: 850
Charge press hPa: 1000
Setting value bar: 7.2...7.8

Full-load del. with charge press.:

Speed 1/min: 800
Charge press. hPa: 1000
Del. quantity cm3/
1000S.: 94.00...95.00
Dispersion cm3/: 4.0
1000S.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 600
Del. quantity cm3/
1000S.: 59.50...60.50

Low-idle speed regulation

Speed 1/min: 250
Del. quantity cm3/
1000S.: 16.50...23.50
Del. quantity cm3/: 6.0
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1350
Charge press hPa: 1000
Del. quantity cm3/
1000S.: 62.00...68.00

Start:

Speed 1/min: 100
Del. quantity cm3/: 60.00...100.00
mind 1000S.: 80.00

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
Charge press hPa: 1000
TD travel mm: 0.60...1.40
mm: (0.30...1.70)
2nd speed 1/min: 850
Charge press hPa: 1000
TD travel mm: 2.00...2.40
mm: (1.50...2.90)
3rd speed 1/min: 950
Charge press hPa: 1000
TD travel mm: 2.90...3.70
mm: (2.60...4.00)

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 1000
 Supply-pump pressure bar: 6.00...6.60
 2nd speed 1/min: 850
 Charge press. hPa: 1000
 Supply-pump pressure bar: 7.20...7.80
 3rd speed 1/min: 1200
 Charge press. hPa: 1000
 Supply-pump pressure bar: 8.70...9.30

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: -
 Overflow quantity cm³/10s: 41.70...83.40
 (26.70...98.40)
 2nd speed 1/min: 1200
 Charge press. hPa: 1000
 Overflow quantity cm³/10s: 55.60...139.00
 (40.60...154.00)

Delivery-quant. and breakaway char.:

1st speed 1/min: 600
 Charge-air pressure-setting point hPa: 400
 Del. quantity cm³/1000S.: 79.50...80.50
 (77.50...82.50)
 2nd speed 1/min: 1550
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 0.00...3.00
 -
 3rd speed 1/min: 1510
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: ... 15.0
 -
 4th speed 1/min: 1460
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 15.00...55.00
 -
 5th speed 1/min: 1350
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 62.00...68.00
 (60.50...69.50)
 6th speed 1/min: 1200
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 87.00...92.00
 (85.50...93.50)
 7th speed 1/min: 1000
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 89.00...94.00
 (87.50...95.50)
 8th speed 1/min: 600
 Charge press. hPa: 1000

Del. quantity cm³/1000S.: 95.50...104.50
 (94.00...106.00)
 9th speed 1/min: 600
 Charge press. hPa: -
 Del. quantity cm³/1000S.: 59.50...60.50
 (57.50...62.50)

Mech. shutoff:
Mech. Abst.:

1st speed 1/min: 1200
 Charge press. hPa: 1000
 Del. quantity cm³/1000S.: 0.00...3.00
 -

Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 250
 Del. quantity cm³/1000S.: 16.50...23.50
 (14.5...25.50)
 Dispersion cm³/1000S.: 6.0
 (6.5)
 2nd speed 1/min: 400
 Del. quantity cm³/1000S.: 0.00...3.00
 -

Automatic starting fuel delivery:

1st speed 1/min: 380
 Del. quantity cm³/1000S.: 80.0...120.0
 -
 2nd speed 1/min: 480
 Del. quantity cm³/1000S.: 40.0...80.0
 -
 4th speed 1/min: 100
 Del. quantity cm³/1000S.: 60.0...100.0
 -

Shutoff electromagnet:

Cut-in min voltage : -
 Rated voltage : -

Mounting and assembly dimensions:

Designation
 K mm: -
 KF mm: K-OT
 MS mm: 0.9...1.3
 Ya mm: 37.4...40.4
 Yb mm: 42.9...48.1

Remarks: :
:

Ya = Distance between VE flange and
speed-control lever in idle
position
Measurement point = edge of control
lever on drive end

Yb = Distance between VE flange and
speed-control lever in rated speed
position
Measurement point = edge of control
lever on distributor-head end



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN
 Edition : 30.11.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 674 048
 Injection pump
 Pump designation : PE4A95D42ORS2662-1
 EP type number : 0 410 694 994
 Governor
 Governor design. : RSV350...1100A8C2222
 -2R
 Governor no. : 0 420 233 339

Customer-spec. information
 Customer : HANOMAG

Engine : D944T
 1st version kw : 97.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003
 Outside diameter
 x wall thickness
 x length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.75...12.85
 Del. quantity cm³/ : 12.9...13.1
 100 s: (12.7...13.3)
 Spread cm³ : 0.3
 100 s: (0.8)

2nd speed rpm : 350.0
 Rack travel in mm : 6.2...6.4
 Del. quantity cm³/ : 1.1...1.5
 100 s: (0.8...1.7)
 Spread cm³ : 0.5
 100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del. quantity : 129.0...131.0
 1000 : (127.0...133.0)
 Spread cm³ : 3.50
 1000 : (8.00)

RATED SPEED

1st version
 Control lever
 position degrees: 96...104

Testing:
 1st rack travel in: 11.80
 Speed rpm : 1140...1150
 2nd rack travel in: 4.00
 Speed rpm : 1185...1215
 3rd rack travel in: 4.00
 Speed rpm : 1205...1235

4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.8

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.75...12.85
2nd speed rpm : 500
Rack travel in m: 13.25...13.35
3rd speed rpm : 900
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 129.5...133.5
1000 s: (127.5...135.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 122.5...137.5
1000 s: (122.00...140.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN
 Edition : 30.11.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 674 049
 Injection pump
 Pump designation : PE4A95D42ORS2662-1
 EP type number : 0 410 694 994
 Governor
 Governor design. : RSV350...1100A8C2222
 -3R
 Governor no. : 0 420 233 340

Customer-spec. information
 Customer : HANOMAG

Engine : D944T

1st version kw : 97.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm³ : 0.3

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.4

Del.quantity cm³/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm³ : 0.5

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm³ : 3.50

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 99...107

Testing:

1st rack travel in: 10.25

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1185...1215

3rd rack travel in: 4.00

Speed rpm : 1210...1240

4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 68...76
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 500
Rack travel in m: 11.65...11.75
3rd speed rpm : 950
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del. quantity cm³/ : 103.5...107.5
1000 s: (101.5...109.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.25
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 122.5...137.5
1000 s: (122.00...140.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

APPLICATION

Wheel loader

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a
 Edition : 30.11.93
 Replaces : 11.07.88
 Test oil : ISO-4113

Combination no. : 0 400 844 083

Injection pump
 Pump designation : PES4A90D410RS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RQV300...1400AB1065-
 SL
 Governor no. : 0 420 212 169

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEIJNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm³/ : 6.3...6.4
 100 s: (6.1...6.6)

Spread cm³ : 0.3
 100 s: (0.5)

2nd speed rpm : 300.0
 Rack travel in mm : 8.6...8.8
 Del.quantity cm³/ : 0.8...1.2
 100 s: (0.6...1.4)

Spread cm³ : 0.2
 100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1500
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del.quantity : 63.0...64.0
 1000 : (61.0...66.0)

Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 107...115

Testing:
1st rack travel in: 9.90
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1560...1590
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76

Testing:
Speed rpm : 100
Minimum rack travel: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.90...11.00
2nd speed rpm : 630
Rack travel in m: 12.20...12.30
3rd speed rpm : 900
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 630
Del.quantity cm³/ : 55.5...58.5
1000 s: (53.0...61.0)
Speed rpm : 900
Del.quantity cm³/ : 54.5...57.5
1000 s: (52.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 30.11.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 844 099
 Injection pump
 Pump designation : PES4A95D410RS2837
 EP type number : 0 410 894 991
 Governor
 Governor design. : RGV300...1400AB1065-
 29L
 Governor no. : 0 420 212 247
 Customer-spec. information
 Customer : DAIMLER-BENZ
 Engine : OM364
 1st version kW : 65.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000
 Inlet press., bar : 1.00
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1-3-4-2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400
 Rack travel in mm : 8.80...8.90
 Del. quantity cm³/ : 7.1...7.2
 100 s: (6.9...7.4)
 Spread cm³ : 0.3
 100 s: (0.6)
 2nd speed rpm : 300.0
 Rack travel in mm : 4.4...4.6
 Del. quantity cm³/ : 1.0...1.4
 100 s: (0.8...1.6)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.60
 2nd speed rpm : 367
 travel mm : 2.16...2.66
 3rd speed rpm : 490
 travel mm : 3.17...3.67
 4th speed rpm : 1453
 travel mm : 8.52...9.02

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1450
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del. quantity : 71.5...72.5
 1000 : (69.5...74.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 7.85
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1520...1550
4th rack travel in: 1570
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack trave: 6.00
Speed rpm : 300
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION
Speed rpm : 275...425

TORQUE CONTROL
Dimension a mm : 0.10
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 8.80...8.90
2nd speed rpm : 500
Rack travel in m: 8.90...9.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 51.0...53.0
1000 s: (48.5...56.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 7.85
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

Rack travel in mm : 14.40...14.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 09.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 844 101
 Injection pump
 Pump designation : PES4A95D41ORS2809
 EP type number : 0 410 894 993
 Governor
 Governor design. : RQV300...1400AB1065-
 23L
 Governor no. : 0 420 212 169

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 65.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEJINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400
 Rack travel in mm : 9.90...10.00
 Del.quantity cm3/ : 6.4...6.6
 100 s: (6.2...6.8)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 8.5...8.7
 Del.quantity cm3/ : 0.8...1.2
 100 s: (0.6...1.4)
 Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.81...1.31
 2nd speed rpm : 593
 travel mm : 3.21...3.71
 3rd speed rpm : 643
 travel mm : 3.61...4.11
 4th speed rpm : 1463
 travel mm : 7.89...8.39

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1450
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del.quantity : 64.5...66.5
 1000 : (62.5...68.5)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 8.90
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 73...81

Testing:
Speed rpm : 100
Minimum rack travel: 9.60
Speed rpm : 300
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION
Speed rpm : 550...700

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 9.90...10.00
2nd speed rpm : 400
Rack travel in m: 11.10...11.30
3rd speed rpm : 630
Rack travel in m: 10.70...11.00
4th speed rpm : 925
Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm³/ : 49.0...53.0
1000 s: (46.5...55.5)
Speed rpm : 630
Del.quantity cm³/ : 51.5...55.5
1000 s: (49.0...58.0)
Speed rpm : 925
Del.quantity cm³/ : 57.0...61.0
1000 s: (54.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.40...14.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 j 4
 Edition : 16.08.93
 Replaces : 04.92
 Test oil : ISO-4113

Combination no. : 0 400 846 591

Injection pump
 Pump designation : PES6A95D410RS2797
 EP type number : 0 410 896 900
 Governor
 Governor design. : RQV300...1400AB1065-22L
 Governor no. : 0 420 212 226

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 97.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder assembly : 0 681 343 009

Opening pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant. per values _____

BEJINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.10...10.20

Del.quantity cm3/ : 6.1...6.3

100 s: (5.9...6.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 8.9...9.1
 Del.quantity cm3/ : 0.8...1.2
 100 s: (0.5...1.4)

Spread cm3 : 0.3
 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30

2nd speed rpm : 500
 travel mm : 2.30...2.80

3rd speed rpm : 750
 travel mm : 4.10...4.30

4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1500
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del.quantity : 61.0...63.0
 1000 : (59.0...65.0)

Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control Lever
position degrees: 106...114

Testing:
1st rack travel in: 9.10
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1540...1570
4th rack travel in: 1670
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack travel: 9.80
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 500...650

TORQUE CONTROL
Dimension a mm : 1.40
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.10...10.20
2nd speed rpm : 400
Rack travel in m: 11.50...11.70
3rd speed rpm : 630
Rack travel in m: 11.10...11.40
4th speed rpm : 925
Rack travel in m: 10.60...10.90

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 400
Del.quantity cm³/ : 49.0...52.0
1000 s: (46.5...54.5)
Speed rpm : 630
Del.quantity cm³/ : 49.0...53.0
1000 s: (46.5...55.5)
Speed rpm : 925
Del.quantity cm³/ : 55.5...59.5
1000 s: (53.0...62.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.10
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.60...15.00

Remarks:

:
Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 34
 Edition : 30.11.93
 Replaces : 12.02.88
 Test oil : ISO-4113

Combination no. : 0 400 864 070

Injection pump
 Pump designation : PES4A85D41G/3RS2732
 EP type number : 0 410 884 947
 Governor
 Governor design. : RSV325...1175A8C2223
 -2L

Governer no. : 0 420 232 484

Customer-spec. information
 Customer : KHD

Engine : F4L913

1st version kw : 56.0
 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEJINNING OF DELIVERY

Test pressure, bar; 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 6.8...6.9

100 s: (6.6...7.1)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Del.quantity : 68.0...69.0

1000 : (66.0...71.0)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 8.90

Speed rpm : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1245...1275

3rd rack travel in: 4.00

Speed rpm : 1250...1280
4th rack travel in: 1425
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 450...510

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1175
Rack travel in m: 9.90...10.00
2nd speed rpm : 500
Rack travel in m: 10.55...10.65
4th speed rpm : 800
Rack travel in m: 10.25...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del. quantity cm³/ : 61.0...63.0
1000 s: (58.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 115.0...125.0
1000 s: (112.0...128.0)
Rack travel in mm : 17.70...17.90

Remarks:

: RENAULT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM
 Edition : 30.11.93
 Replaces : 18.12.92
 Test oil : ISO-4113
 Combination no. : 0 400 864 094
 Injection pump
 Pump designation : PES4A90D320/3RS2743
 EP type number : 0 410 894 034
 Governor
 Governor design. : RSV325...1150A5C505-5R
 Governor no. : 0 420 233 289

Customer-spec. information
 Customer : MWM

Engine : TD226B-4

1st version kW : 63.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
 : (2.90...3.10)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.50...9.60

Del.quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 71.5...72.5

1000 : (69.5...74.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:
1st rack travel in: 8.50
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1210...1240
3rd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1330
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 65...73
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.2

Testing:
Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 415...475

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 9.50...9.60
2nd speed rpm : 500
Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm³/ : 53.5...58.5
1000 s: (51.5...60.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 8.50
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 138.0...148.0
1000 s: (135.0...151.0)
Rack travel in mm : 19.50...21.00

Remarks:
:

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CDC
 Edition : 30.11.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 864 096
 Injection pump
 Pump designation : PES4A1000320/3RS2846
 EP type number : 0 410 804 002
 Governor
 Governor design. : RSV400...1250AOC2267
 R
 Governor no. : 0 420 233 335
 Customer-spec. information
 Customer : CDC
 Engine : 4 BT
 1st version kW : 446.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 419 992 198
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 014
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.10...3.20
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00
 Firing order : 1-3-4-2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00
 & maximum rack tra: 21.00
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 12.15...12.25
 Del. quantity cm³/ : 10.5...10.7
 100 s: (10.3...10.9)
 Spread cm³ : 0.3
 100 s: (0.8)

2nd speed rpm : 400.0
 Rack travel in mm : 6.1...6.3
 Del. quantity cm³/ : 1.5...1.9
 100 s: (1.2...2.1)
 Spread cm³ : 0.5
 100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 700
 Del. quantity : 105.0...107.0
 1000 : (103.0...109.0)
 Spread cm³ : 3.00
 1000 : (8800)

RATED SPEED

1st version
 Control lever
 position degrees: 104...112

Testing:

1st rack travel in: 11.20
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1370...1400
4th rack travel in: 1475
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 80...88
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 400
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 12.15...12.25
2nd speed rpm : 750
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.25...12.35

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 9.60...9.80
2nd pressure hPa : 360
Rack travel in m: 10.35...10.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 750
Del. quantity cm³/ : 111.0...115.0
1000 s: (109.0...117.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 75.0...77.0
1000 s: (73.0...79.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 162.5...177.5
1000 s: (160.0...180.0)
Rack travel in mm : 19.50...21.00

Remarks:

: C.D.C. # 3925763

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 45
 Edition : 30.11.93
 Replaces : 05.03.90
 Test oil : ISO-4113

Combination no. : 0 400 866 159

Injection pump
 Pump designation : PES6A85D410/3RS2761
 EP type number : 0 410 886 895
 Governor
 Governor design. : RSV325...1400A2C2245

Governer no. : 0 420 232 537

Customer-spec. information
 Customer : KHD

Engine : BF6L913T

1st version kW : 85.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEUINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 6.9...7.1

100 s: (6.8...7.2)

Spread cm³ : 0.3

100 s: (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/ : 1.3...1.9

100 s: (1.1...2.1)

Spread cm³ : 0.4

100 s: (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 69.5...70.5

1000 : (67.5...72.5)

Spread cm³ : 3.00

1000 : (7.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 8.70

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1265...1295

3rd rack travel in: 4.00

Speed rpm : 1285...1315
4th rack travel in: 1445
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 420...480

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 10.95...111.05
3rd speed rpm : 800
Rack travel in m: 10.90...11.10
4th speed rpm : 975
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 58.5...61.5
1000 s: (56.5...63.5)
Speed rpm : 800
Del.quantity cm³/ : 62.5...65.5
1000 s: (60.5...67.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 87.5...102.5
1000 s: (85.0...105.0)
Rack travel in mm : 17.80...18.20

Remarks:

: TM 2

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 30.11.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 177
 Injection pump
 Pump designation : PES6A95D12ORS2773
 EP type number : 0 410 896 904
 Governor
 Governor design. : RSV350...1050AOC2260
 -1R
 Governor no. : 0 420 233 334

Customer-spec. information
 Customer : CUMMINS

Engine : 6 BT

1st version kw : 150.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.10...2.20
 : (2.05...2.25)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del.quantity cm³/ : 9.0...9.2

100 s: (8.8...9.4)

Spread cm³ : 0.3

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.4...7.6

Del.quantity cm³/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm³ : 0.5

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 1.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 90.5...92.5

1000 : (87.5...94.5)

Spread cm³ : 3.50

1000 : (8.00)

RATED SPEED

1st version

Control lever

position degrees: 82...90

Testing:

1st rack travel in: 10.15

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1160...1190

3rd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.00

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 7.40...7.60
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 11.15...11.35

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 410
Rack travel in m: 10.45...10.55

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 500
Del.quantity cm3/ : 76.5...78.5
1000 s: (74.5...80.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 56.0...58.0
1000 s: (54.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.15
Speed rpm : 1090...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 102.5...117.5
1000 s: (100.0...120.0)
Rack travel in mm : 14.80...15.20

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 27.09.93
 Replaces : 06.93
 Test oil : ISO-4113

Combination no. : 0 400 866 181

Injection pump
 Pump designation : PES6A100D320/3RS2691
 -4

EP type number : 9 410 230 030
 Governor
 Governor design. : RSV450...1100A0C2190
 -59R
 Governor no. : 0 420 233 298

Customer-spec. information
 Customer : CDC

Engine : 6 CT

1st version kw : 140.0
 2nd version kw : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 11.90...12.00
 Del. quantity cm³/ : 11.3...11.5
 100 s: (11.1...11.7)
 Spread cm³ : 0.4
 100 s: (0.6)

2nd speed rpm : 450.0
 Rack travel in mm : 5.7...5.9
 Del. quantity cm³/ : 1.6...2.0
 100 s: (1.4...2.3)
 Spread cm³ : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del. quantity : 113.5...115.5
 1000 : (111.5...117.5)
 Spread cm³ : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 49...57

Testing:
1st rack travel in: 10.90
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1250...1260
3rd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 31...39
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 5.3

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 450
Rack travel in mm : 5.70...5.90

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.90...12.00
2nd speed rpm : 750
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del. quantity cm³/ : 124.5...128.5
1000 s: (122.5...130.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 130.0...150.0
1000 s: (125.0...155.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 450
Rack travel in mm : 5.70...5.90

Del. quantity cm³/ : 16.5...20.5
1000 s: (14.0...23.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:
: C.D.C. # 3922145
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL 4,4 c
 Edition : 30.11.93
 Replaces : 21.09.92
 Test oil : ISO-4113
 Combination no. : 0 400 874 250
 Injection pump
 Pump designation : PES4A95D320RS2807
 EP type number : 0 410 894 994
 Governor
 Governor design. : RSV375...1125A2C2178
 -7R
 Governor no. : 0 420 233 279

Customer-spec. information
 Customer : VALMET

Engine : 420 DS

1st version kw : 75.0
 Rated speed : 2250

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1125

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.5...5.7

Del.quantity cm³/ : 1.8...2.4

100 s: (1.5...2.6)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1125

Del.quantity : 86.5...88.5

1000 : (84.5...90.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 97...105

Testing:
1st rack travel in: 10.20
Speed rpm : 1165...1175
2nd rack travel in: 4.00
Speed rpm : 1235...1265
3rd rack travel in: 4.00
Speed rpm : 1245...1275
4th rack travel in: 1410
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.1

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 375
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 465...525

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1125
Rack travel in m: 11.20...11.30
2nd speed rpm : 500
Rack travel in m: 11.60...11.70
3rd speed rpm : 750
Rack travel in m: 11.55...11.65
4th speed rpm : 965
Rack travel in m: 11.25...11.45

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Speed rpm : 750
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 1165...1175

STARTING FUEL DELIVERY

G03

Speed rpm : 100
Del.quantity cm3/ : 205.0...215.0
1000 s: (202.0...218.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 18.0...24.0
1000 s: (15.5...26.5)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL
 Edition : 1.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 874 254
 Injection pump
 Pump designation : PES4A95D32ORS2847
 EP type number : 0 410 894 990
 Governor
 Governor design. : RSV375...1200A5C2268
 R
 Governor no. : 0 420 233 337

Customer-spec. information
 Customer : VALMET

Engine : 420 DS

1st version kW : 84.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 2- 4- 3

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.45...12.55

Del.quantity cm³/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.1...5.3

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 99.0...101.0

1000 : (97.0...103.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 100...108

Testing:
1st rack travel in: 11.50
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1310...1340
3rd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 1425
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 69...75
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 375
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 445...505

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 12.45...12.55
2nd speed rpm : 500
Rack travel in m: 13.15...13.25
3rd speed rpm : 1050
Rack travel in m: 12.90...13.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.15...13.25

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.90...12.10
2nd pressure hPa : 440
Rack travel in m: 12.85...12.95
3rd pressure hPa : 350
Rack travel in m: 12.25...12.55

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm³/ : 89.0...93.0
1000 s: (87.0...95.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 78.0...80.0
1000 s: (76.0...82.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...210.0
1000 s: (195.0...215.0)
Rack travel in mm : 20.25

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 18.0...24.0
1000 s: (15.5...26.5)
Spread cm³ : 3.50
1000 s: (5.00)

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 1.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 331A
 Injection pump
 Pump designation : PES6A90D410RS2710
 EP type number : 0 410 896 082
 Governor
 Governor design. : RSV350...1400A0C2006
 -2L
 Governor no. : 0 420 232 453

Customer-spec. information
 Customer : MERCEDESS-BENZ

Engine : OM 366

1st version kW : 85.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.30...10.40

Del.quantity cm³/ : 5.6...5.7

100 s: (5.4...5.9)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 8.4...8.6

Del.quantity cm³/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 56.0...57.0

1000 : (54.0...59.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 101...109

Testing:

1st rack travel in: 9.30

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1295...1325

4th rack travel in: 1360

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 8.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 400
Rack travel in mm : 8.40...8.60
Rack travel in mm : 2.00
Speed rpm : 480...540

SET IDLE AUXILIARY SPRING

Speed rpm : 100

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 11.95...12.05
3rd speed rpm : 700
Rack travel in m: 11.90...12.10
4th speed rpm : 1000
Rack travel in m: 10.95...11.25

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 55.0...57.0
1000 s: (52.5...59.5)
Spread cm³ : ?
1000 s: (5.50)
Speed rpm : 700
Del.quantity cm³/ : 58.0...60.0
1000 s: (55.5...62.5)
Spread cm³ : ?
1000 s: (5.50)
Speed rpm : 1000
Del.quantity cm³/ : 57.0...59.0
1000 s: (54.5...61.5)
Spread cm³ : ?
1000 s: (5.50)

BREAKAWAY

1st version

1m. rack travel less than
full load rack tr: 9.30
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
 Edition : 1.12.93
 Replaces : 22.01.93
 Test oil : ISO-4113
 Combination no. : 0 400 876 405
 Injection pump
 Pump designation : PES6A95D410RS2835
 EP type number : 0 410 896 896
 Governor
 Governor design. : RSV400...1050A2C2263
 -1L
 Governor no. : 0 420 232 584

Customer-spec. information
 Customer : FNH-GECTECH

Engine : 7.5 L-8640 Trak

1st version kW : 131.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

G08

Prestroke mm : 2.55...2.65
 : (2.50...2.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.10...12.30

Del.quantity cm³/ : 11.1...11.5

100 s: (10.8...11.7)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 111.0...115.0

1000 : (108.5...117.5)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 95...103

Testing:

1st rack travel in: 11.20

Speed rpm : 1093...1097
2nd rack travel in: 4.00
Speed rpm : 1163...1177
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 450
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.10...12.30
2nd speed rpm : 750
Rack travel in m: 14.00...14.20
3rd speed rpm : 925
Rack travel in m: 13.10...13.40
4th speed rpm : 1050
Rack travel in m: 11.60...11.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.20
2nd pressure hPa : 800
Rack travel in m: 13.50...13.60
3rd pressure hPa : 500
Rack travel in m: 11.60...12.00

FUEL DELIVERY CHARACTERISTICS

1s. version

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 140.0...142.0
1000 s: (138.0...144.0)

Spread cm3 : 3.50
1000 s: (6.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 89.0...91.0
1000 s: (86.5...93.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1093...1097

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 185.0...205.0
1000 s: (182.0...208.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
 Edition : 01.12.93
 Replaces : 03.02.93
 Test oil : ISO-4113
 Combination no. : 0 400 876 406
 Injection pump
 Pump designation : PES6A95D410RS2835
 EP type number : 0 410 896 896
 Governor
 Governor design. : RSV400...1050A2C2263
 -2L
 Govenner no. : 0 420 232 585

Customer-spec. information
 Customer : FNH-GEOTECH

Engine : 7.5 L-8740 Trak

1st version kW : 142.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

G10

Prestroke mm : 2.55...2.65
 : (2.50...2.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 13.40...13.50
 Del. quantity cm³/ : 13.0...13.4
 100 s : (12.7...13.6)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 450.0
 Rack travel in mm : 5.2...5.3
 Del. quantity cm³/ : 1.2...1.6
 100 s : (0.9...1.8)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1200
 Del. quantity : 130.0...134.0
 1000 : (127.5...136.5)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 92...100

Testing:
 1st rack travel in: 12.40

Speed rpm : 1093...1098
2nd rack travel in: 4.00
Speed rpm : 1163...1178
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 450
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 580...650

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 13.40...13.50
2nd speed rpm : 650
Rack travel in m: 15.00...15.20
3rd speed rpm : 900
Rack travel in m: 14.10...14.50
4th speed rpm : 1050
Rack travel in m: 12.90...13.00

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.20

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 10.55...10.65
2nd pressure hPa : 900
Rack travel in m: 14.00...14.10
3rd pressure hPa : 650
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 164.0...166.0
1000 s: (162.0...168.0)

Spread cm³ : 3.50
1000 s: (-)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 99.0...101.0
1000 s: (96.5...103.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1093...1098

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 185.0...205.0
1000 s: (182.0...208.0)

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.50
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FOR
 Edition : 01.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 410
 Injection pump
 Pump designation : PES6A95D410RS2838
 EP type number : 0 410 896 895
 Governor
 Governor design. : RSV400...1050A2C2263
 -6L
 Governor no. : 0 420 232 589

Customer-spec. information
 Customer : FNH-GEOTECH

Engine : 7.5 L5

1st version kW : 119.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.55...2.65
 : (2.50...2.70)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 10.75...10.85
 Del.quantity cm3/ : 9.4...9.6
 100 s: (9.2...9.8)
 Spread cm3 : 0.3
 100 s: (0.8)

2nd speed rpm : 450.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm3/ : 1.3...1.7
 100 s: (1.1...2.0)
 Spread cm3 : 0.5
 100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 700
 Del.quantity : 94.5...96.5
 1000 : (92.5...98.5)
 Spread cm3 : 3.50
 1000 : (8.00)

RATED SPEED

1st version
 Control lever
 position degrees: 103...111

Testing:
 1st rack travel in: 9.80

Speed rpm : 1293...1298
2nd rack travel in: 4.00
Speed rpm : 1368...1373
4th rack travel in: 1475
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 450
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 520...580

SET IDLE AUXILIARY SPRING

Speed rpm : 450
Rack travel in mm : 0.50

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 10.75...10.85
2nd speed rpm : 600
Rack travel in m: 10.75...10.95

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 10.70...10.90

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 7.90...8.10
2nd pressure hPa : 475
Rack travel in m: 10.15...10.25
3rd pressure hPa : 310
Rack travel in m: 8.80...9.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm³/ : 96.5...100.5
1000 s: (94.5...102.5)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 60.5...62.5
1000 s: (58.5...64.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1293...1298

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 192.5...207.5
1000 s: (190.0...210.0)
Rack travel in mm : 18.10

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.20...5.50
Del.quantity cm³/ : 13.0...17.0
1000 s: (10.5...19.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Hydraulic latching of starting
delivery.

Latching at 0.75 bar...0.85 bar.

Unlatching at 0.40 bar...0.50 bar

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD
Edition : 1.12.93
Replaces : 26.02.93
Test oil : ISO-4113
Combination no. : 0 400 876 415
Injection pump
Pump designation : PES6A95D410RS2839
EP type number : 0 410 896 894
Governor
Governor design. : RSV325...1250A5C1164
Governor no. : 0 420 232 593

Customer-spec. information
Customer : KHD

Engine : BF6L913C

1st version kW : 164.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70
: (2.55...2.75)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 11.6...11.8

100 s: (11.4...12.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

Del.quantity : 116.0...118.0

1000 : (114.0...120.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 11.50

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1315...1345

3rd rack travel in: 4.00
Speed rpm : 1339...1369
4th rack travel in: 1540
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 62...70
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 12.50...12.60
2nd speed rpm : 500
Rack travel in m: 12.50...12.70
3rd speed rpm : 1150
Rack travel in m: 12.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.50...12.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 450
Rack travel in m: 11.70...11.80
3rd pressure hPa : 300
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1150
Del. quantity cm³/ : 115.5...118.5
1000 s: (113.0...121.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 74.0...76.0
1000 s: (72.0...78.0)

BREAKAWAY

1st version
1min rack travel less than
full load rack tr: 11.50
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 17.10...17.30

Remarks:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 1.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 418
 Injection pump
 Pump designation : PES6A95D41ORS2844
 EP type number : 0 410 896 893
 Governor
 Governor design. : RSV350...1200A1C1163
 -3L
 Governor no. : 0 420 232 596

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 75.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEJINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 8.65...8.75
 Del.quantity cm3/ : 5.5...5.7
 100 s: (5.3...5.9)
 Spread cm3 : 0.3
 100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm3/ : 0.8...1.4
 100 s: (0.5...1.6)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del.quantity : 55.0...57.0
 1000 : (53.0...59.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 108...116

Testing:
 1st rack travel in: 7.70
 Speed rpm : 1240...1245
 2nd rack travel in: 4.00
 Speed rpm : 1263...1280
 3rd rack travel in: 4.00

Speed rpm : 1315...1345
4th rack travel in: 1450
Speed rpm : 0.30...1.40

APPLICATION

Combine-harvester

LOW IDLE 1

Control lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 8.65...8.75
2nd speed rpm : 500
Rack travel in m: 8.65...8.85

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 40.0...43.0
1000 s: (37.5...45.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 7.70
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 15.40...15.80

Remarks:

:

CHECKING INTERMEDIATE CONTROL CURVE
(CONTROL-LEVER POSITION)

- Control-lever position 30°, n = 1000
1/min., control-rod travel=9.5...10.2 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 1.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 419
 Injection pump
 Pump designation : PES6A95D41DRS2844
 EP type number : 0 410 896 893
 Governor
 Governor design. : RSV350...1200A1C1154.
 -3L
 Governor no. : 0 420 232 597

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 366

1st version kW : 81.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEJINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.45...9.55

Del.quantity cm3/ : 6.1...6.3

100 s: (5.9...6.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 0.8...1.4

100 s: (0.5...1.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 61.0...63.0

1000 : (59.0...65.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 8.50

Speed rpm : 1240...1245

2nd rack travel in: 4.00

Speed rpm : 1263...1280

3rd rack travel in: 4.00

Speed rpm : 1300...1330
4th rack travel in: 1400
Speed rpm : 0.30...1.40

Combine-harvester

LOW IDLE 1

Control lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 9.45...9.55
2nd speed rpm : 500
Rack travel in m: 9.85...10.00
3rd speed rpm : 850
Rack travel in m: 9.55...9.85

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 51.0...53.0
1000 s: (48.5...56.5)
Speed rpm : 850
Del.quantity cm³/ : 60.5...63.5
1000 s: (58.0...66.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.50
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 80.0...90.0
1000 s: (77.0...93.0)
Rack travel in mm : 15.50...15.90

Remarks:

:

APPLICATION

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL
 Edition : 1.12.93
 Replaces : --
 Test oil : ISO-4113
 Combination no. : 0 400 876 421
 Injection pump
 Pump designation : PES6A95D410RS2848
 EP type number : 0 410 896 892
 Governor
 Governor design. : RSV500...1100A5C2269
 R
 Governor no. : 0 420 233 338

Customer-spec. information
 Customer : VALMET

Engine : 634 DS

1st version kw : 140.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
 & maximum rack tra: 21.00
 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 13.2...13.4

100 s: (13.0...13.6)

Spread cm³ : 0.3

100 s: (0.8)

2nd speed rpm : 500.0

Rack travel in mm : 4.20...4.40

Del.quantity cm³/ : 1.8...2.4

100 s: (1.6...2.5)

Spread cm³ : 0.5

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 132.0...134.0

1000 : (130.0...136.0)

Spread cm³ : 3.50

1000 : (8.00)

RATED SPEED

1st version

Control lever
position degrees: 95...103

Testing:

1st rack travel in: 13.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 500
Rack travel in mm : 4.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 500
Rack travel in mm : 4.20...4.40
Rack travel in mm : 2.00
Speed rpm : 500...560

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.00...14.10
2nd speed rpm : 700
Rack travel in m: 14.50...14.70
3rd speed rpm : 975
Rack travel in m: 14.20...14.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.20...14.40

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 13.05...13.15
2nd pressure hPa : 655
Rack travel in m: 13.85...13.95
3rd pressure hPa : 550
Rack travel in m: 13.10...13.30

FULL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700
Del.quantity cm3/ : 135.0...139.0
1000 s: (133.0...141.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 102.0...104.0
1000 s: (100.0...106.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 197.5...212.5
1000 s: (195.0...215.0)
Rack travel in mm : 19.50...21.00

Remarks:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 13.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 840 097
 Injection pump
 Pump designation : PE12P110A52OLS839-1
 EP type number : 0 411 810 043
 Governor
 Governor design. : RQV250...1150PA668R
 Governor no. : 0 421 813 379

Customer-spec. information
 Customer : MAN

Engine : D2542 MTE
 1st version kw : 343.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00

Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 11.90...12.00
 Del. quantity cm³/ : 14.2...14.5
 100 s : (13.9...14.7)
 Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 250.0
 Rack travel in mm : 6.8...7.0
 Del. quantity cm³/ : 1.3...1.98
 100 s : (1.0...2.0)
 Spread cm³ : 0.4
 100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.20...1.30
 2nd speed rpm : 500
 travel mm : 3.20...3.70
 3rd speed rpm : 900
 travel mm : 6.30...6.50
 4th speed rpm : 1150
 travel mm : 8.20...8.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1170
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Del. quantity : 142.0...145.0
 1000 : (139.5...147.5)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 62...70

Testing:
1st rack travel in: 10.90
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 250
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 470...530

START CUT-OUT

Speed 1/min : 170 (190)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1190...1200

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 a
 Edition : 01.12.93
 Replaces : 03.87
 Test oil : ISO-4113
 Combination no. : 0 401 840 734
 Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQV300...1075PA746
 Governor no. : 0 421 813 477

Customer-spec. information
 Customer : KHD

Engine : BF12L513

1st version kW : 333.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 11.35...11.45

Del.quantity cm³/ : 13.1...13.5

100 s : (12.9...13.7)

Spread cm³ : 0.5

100 s : (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.6...6.8

Del.quantity cm³/ : 1.4...2.0

100 s : (1.1...2.2)

Spread cm³ : 0.7

100 s : (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.30...1.40

2nd speed rpm : 380
 travel mm : 2.30...2.70

3rd speed rpm : 430
 travel mm : 2.80...3.30

4th speed rpm : 700
 travel mm : 5.30...5.60

5th speed rpm : 1120
 travel mm : 8.40...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1120
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1075
 Aneroid pressure h: 900
 Del.quantity : 131.0...135.0
 1000 : (129.0...137.0)

Spread cm³ : 5.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 10.40
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 15...23

Testing:
Speed rpm : 100
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 315...465

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 450
Pressure hPa : 900
Rack travel mm : 11.35...11.45

Measurement
Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 10.45...10.55
2nd pressure hPa : 500
Rack travel in m: 11.15...11.25
3rd pressure hPa : 430
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 450

Del.quantity cm³/ : 108.0...112.0
1000 s: (105.0...115.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.40
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 a1
 Edition : 01.12.93
 Replaces : 09.86
 Test oil : ISO-4113
 Combination no. : 0 401 840 754
 Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQV300...1150PA820
 Governor no. : 0 421 813 561

Customer-spec. information
 Customer : KHD

Engine : BF12L513C

1st version kw : 386.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.45...12.55

Del.quantity cm3/ : 15.6...15.8

100 s: (15.3...16.1)

Spread cm3 : 0.5

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.2)

Spread cm3 : 0.7

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.40

2nd speed rpm : 380
 travel mm : 2.30...2.60

3rd speed rpm : 800
 travel mm : 5.20...5.50

4th speed rpm : 1200
 travel mm : 8.50...8.70

5th speed rpm : 1280
 travel mm : 9.30...9.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1190
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 750
 Del.quantity : 156.0...158.0
 1000 : (153.0...161.0)

Spread cm3 : 5.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 11.40
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 81...89

Testing:
Speed rpm : 100
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 450
Pressure hPa : 750
Rack travel mm : 12.40...12.60

Measurement

Speed 1/min : 450

1st pressure hPa : -
Rack travel in m: 10.60...10.80
2nd pressure hPa : 430
Rack travel in m: 12.00...12.10
3rd pressure hPa : 280
Rack travel in m: 11.05...11.25

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 450

Del.quantity cm3/ : 108.0...112.0
1000 s: (105.0...115.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 a2
 Edition : 1.12.93
 Replaces : 26.12.88
 Test oil : ISO-4113
 Combination no. : 0 401 840 765
 Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQV300...1000PA907
 Governor no. : 0 421 813 729

Customer-spec. information

Customer : KHD
 Engine : BF12L513C

1st version kW : 315.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 11.65...11.75
 Del.quantity cm³/ : 14.1...14.3
 100 s : (13.8...14.6)
 Spread cm³ : 0.5
 100 s : (0.8)

2nd speed rpm : 300.0
 Rack travel in mm : 6.6...6.8
 Del.quantity cm³/ : 1.4...2.0
 100 s : (1.1...2.2)
 Spread cm³ : 0.7
 100 s : (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.60...1.90
 2nd speed rpm : 450
 travel mm : 3.00...3.40
 3rd speed rpm : 750
 travel mm : 5.20...5.60
 4th speed rpm : 1050
 travel mm : 7.90...8.10
 5th speed rpm : 1120
 travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1040
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del.quantity : 141.0...143.0
 1000 : (138.0...146.0)

Spread cm³ : 5.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 10.70
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 85...93

Testing:

Speed rpm : 100
Minimum rack travel: 8.10
Speed rpm : 300
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 334...532

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 11.65...11.75
2nd speed rpm : 700
Rack travel in m: 11.95...12.05
3rd speed rpm : 900
Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del. quantity cm³/ : 148.0...152.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version

1m. rack travel less than

full load rack tr: 10.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD 19,2 a4
 Edition : 01.12.93
 Replaces : 09.06.89
 Test oil : ISO-4113
 Combination no. : 0 401 840 766
 Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQV475...1075PA907-1
 Governor no. : 0 421 813 739

Customer-spec. information
 Customer : KHD

Engine : BF12L513C
 1st version kW : 333.0
 Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

H02

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 11.25...11.35

Del.quantity cm³/ : 13.2...13.4

100 s : (13.0...13.6)

Spread cm³ : 0.5

100 s : (0.8)

2nd speed rpm : 475.0

Rack travel in mm : 6.4...6.6

Del.quantity cm³/ : 1.7...2.3

100 s : (1.4...2.5)

Spread cm³ : 0.7

100 s : (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 475
 travel mm : 1.10...1.50

2nd speed rpm : 650
 travel mm : 3.40...4.00

3rd speed rpm : 950
 travel mm : 5.60...6.20

4th speed rpm : 1100
 travel mm : 7.70...7.90

5th speed rpm : 1150
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Del.quantity : 132.0...134.0

1000 : (130.0...136.0)

Spread cm³ : 5.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 10.30
Speed rpm : 1095...1105
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 85...93

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 475
Rack travel in mm : 6.40...6.60

CONSTANT REGULATION
Speed rpm : 475...640

TORQUE CONTROL
Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 11.25...11.35
2nd speed rpm : 800
Rack travel in m: 11.60...11.80
3rd speed rpm : 1000
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 395 (415)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm³/ : 141.0...145.0
1000 s: (139.0...147.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.30
Speed rpm : 1095...1105

H03

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...165.0
1000 s: (131.0...169.0)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 13.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 840 774
 Injection pump
 Pump designation : PE12P120A520/4LS3861
 EP type number : 0 411 820 729
 Governor
 Governor design. : RQV300...900PA668-9
 Governor no. : 0 421 814 051

Customer-spec. information
 Customer : MAN

Engine : D2842LE

1st version kW : 440.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 3-45-60-105-120-165-
 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 11.00...11.10
 Del. quantity cm3/ : 21.5...21.7
 100 s: (21.2...22.0)
 Spread cm3 : 0.6
 100 s: (1.1)

2nd speed rpm : 250.0
 Rack travel in mm : 4.8...5.2
 Del. quantity cm3/ : 1.8...2.4
 100 s: (1.5...2.7)
 Spread cm3 : 0.9
 100 s: (1.3)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.96...1.16
 2nd speed rpm : 440
 travel mm : 3.24...3.64
 3rd speed rpm : 490
 travel mm : 3.83...4.23
 4th speed rpm : 710
 travel mm : 5.39...5.79
 5th speed rpm : 970
 travel mm : 8.36...8.56

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1000
 Rack travel in mm : 8.70...11.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Del.quantity : 215.0...217.0
1000 : (212.0...220.0)
Spread cm3 : 6.50
1000 : (11.0)

Remarks:

: MAN-NR. 3-7252

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 10.00
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1005...11035
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 150
Minimum rack trave: 6.00
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...430

START CUT-OUT

Speed 1/min : 200 (220)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.90...7.10
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

H05

BOSCH INJ. PUMP TEST SPECIFICATIONS

11- 10- 3- 6- 7- 12

Note remarks

Test sheet : KHD
 Edition : 2.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 840 775
 Injection pump
 Pump designation : PE12P110A920LS3173
 EP type number : 0 411 810 708
 Governor
 Governor design. : RQV300...900PA1089
 Governor no. : 0 421 814 065

Customer-spec. information
 Customer : KHD

Engine : BF12L513C

1st version kW : 304.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 4- 9- 8- 5- 2-

H06

Phasing : 0-15-60-75-120-135-
 180-195-240-255-300-
 315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 12.8...13.0

100 s : (12.5...13.3)

Spread cm³ : 0.5

100 s : (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 6.7...6.9

Del.quantity cm³/ : 1.4...2.0

100 s : (1.1...2.2)

Spread cm³ : 0.7

100 s : (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.06...1.46

2nd speed rpm : 396
 travel mm : 2.29...2.79

3rd speed rpm : 520
 travel mm : 3.21...3.71

4th speed rpm : 774
 travel mm : 5.92...6.42

5th speed rpm : 959
 travel mm : 8.62...8.92

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 8.70...11.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 128.0...130.0

1000 : (125.0...133.0)

Spread cm³ : 5.00
1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 10.20
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 990...1020
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 84...92

Testing:
Speed rpm : 200
Minimum rack trave: 9.50
Speed rpm : 300
Rack travel in mm : 6.70...6.90

CONSTANT REGULATION
Speed rpm : 300...400

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 11.20...11.30
2nd speed rpm : 600
Rack travel in m: 11.20...11.30

START CUT-OUT

Speed 1/min : 220 (240)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del..quantity cm³/ : 140.0...160.0
1000 s: (135.0...165.0)

Remarks:

:

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0q20
 Edition : 02.12.93
 Replaces : 03.07.92
 Test oil : ISO-4113

Combination no. : 0 401 846 760

Injection pump
 Pump designation : PE6P110A32ORS3108X
 EP type number : 0 411 816 730
 Governor
 Governor design. : RQV250...1100PA920-2
 Governor no. : 0 421 813 779

Customer-spec. information
 Customer : VOLVO

Engine : THD100ED101KB KF

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del. quantity cm³/ : 16.5...16.7

100 s: (16.2...17.0)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250.0
 Rack travel in mm : 5.0...5.2
 Del. quantity cm³/ : 3.0...3.4
 100 s: (2.7...3.6)

Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.10...1.30

2nd speed rpm : 500
 travel mm : 4.20...4.80

3rd speed rpm : 700
 travel mm : 6.30...6.70

4th speed rpm : 950
 travel mm : 6.30...6.70

5th speed rpm : 1100
 travel mm : 7.00...7.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1175
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del. quantity : 165.0...167.0
 1000 : (162.0...170.0)

Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.35
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION
Speed rpm : 260...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.40
2nd pressure hPa : 290
Rack travel in m: 9.55...9.65
3rd pressure hPa : 710
Rack travel in m: 11.75...11.95

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 106.0...108.0
1000 s: (103.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.35
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...200.0
1000 s: (166.0...204.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 30.0...34.0
1000 s: (27.5...36.5)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 12,2 d1
 Edition : 27.09.93
 Replaces : 11.91
 Test oil : ISO-4113
 Combination no. : 0 401 846 901
 Injection pump
 Pump designation : PE6P120A320RS3240-1
 E¹ type number : 0 411 826 787
 Governor
 Governor design. : RQV250...950PA921-17
 Governor no. : 0 421 813 800

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD 122 FH

1st version kW : 269.0
 2nd version kW : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 22.3...22.5

100 s: (22.0...22.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.5...6.7

Del. quantity cm³/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm³ : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40

2nd speed rpm : 450

travel mm : 3.60...4.20

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 985

travel mm : 8.10...8.30

5th speed rpm : 1060

travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1030

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 223.0...225.0
1000 : (220.0...228.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 11.70
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68

Testing:

Speed rpm : 100
Minimum rack travel: 8.10
Speed rpm : 250
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 90
Rack travel in m: 10.10...10.20
3rd pressure hPa : 470
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 154.0...156.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 270.0...310.0
1000 s: (266.0...314.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.50...6.70
Del.quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,2 a
 Edition : 2.12.93
 Replaces : 24.07.92
 Test oil : ISO-4113

Combination no. : 0 401 846 935

Injection pump
 Pump designation : PE6P120A320RS3262
 EP type number : 0 411 826 797
 Governor
 Governor design. : RQV300...1050PA232-4
 Governor no. : 0 421 813 883

Customer-spec. information
 Customer : VOLVO

Engine : TD102 GC

1st version kW : 180.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.40...9.50

Del. quantity cm³/ : 17.4...17.6
 100 s : (17.1...17.9)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.5
 Del. quantity cm³/ : 3.2...3.7
 100 s : (2.9...3.9)

Spread cm³ : 0.5
 100 s : (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.30...1.70

2nd speed rpm : 500
 travel mm : 2.70...3.30

3rd speed rpm : 800
 travel mm : 4.80...5.50

4th speed rpm : 1100
 travel mm : 7.60...7.80

5th speed rpm : 1180
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1

Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900

Del.quantity : 174.0...176.0
1000 : (171.0...179.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:
1st rack travel in: 8.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 300
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 300...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 9.40...9.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 170
Rack travel in m: 9.40...9.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 171.0...173.0
1000 s: (168.0...176.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...190.0
1000 s: (156.0...194.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 32.0...37.0
1000 s: (29.5...39.5)
Spread cm³ : 5.00
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 5,9 b
 Edition : 02.12.93
 Replaces : 18.12.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 937
 Injection pump
 Pump designation : PE6P110A32ORS3266
 EP type number : 0 411 816 777
 Governor
 Governor design. : RGV300...1300PA996K
 Governor no. : 0 421 815 277

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD63ES

1st version kW : 155.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 2.45...2.55
 : (2.40...2.60)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 780

 Rack travel in mm : 11.70...11.80

 Del.quantity cm3/ : 13.5...13.7
 100 s: (13.3...13.9)

 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 330.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm3/ : 1.7...2.1
 100 s: (1.4...2.4)
 Spread cm3 : 0.7
 100 s: (1.1)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 330
 travel mm : 1.30...1.70
 2nd speed rpm : 460
 travel mm : 2.85...3.35
 3rd speed rpm : 610
 travel mm : 3.35...3.84
 4th speed rpm : 1000
 travel mm : 5.43...5.930
 5th speed rpm : 1374
 travel mm : 9.88...10.08

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1
 Speed rpm : 1470
 Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 780
 Aneroid pressure h: 1200

Del.quantity : 135.0...137.0
1000 : (133.0...139.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 11.20
Speed rpm : 1360...1370
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1520
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 230
Minimum rack travel: 6.30
Speed rpm : 330
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 355...545

TORQUE CONTROL

Dimension a mm : 0.25
Torque control curve - 1st version
1st speed rpm : 780
Rack travel in m: 11.70...11.80
2nd speed rpm : 1300
Rack travel in m: 11.90...12.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1300
Pressure hPa : 1200
Rack travel mm : 11.90...12.10

Measurement

Speed 1/min : 1300

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 95
Rack travel in m: 8.80...8.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm3/ : 128.0...130.0
1000 s: (124.0...134.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 780
Del.quantity cm3/ : 73.0...75.0
1000 s: (70.0...78.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 65.0...85.0
1000 s: (61.0...89.0)
Rack travel in mm : 8.50...8.70

LOW IDLE

Speed rpm : 330
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 17.0...21.0
1000 s: (14.0...24.0)
Spread cm3 : 7.00
1000 s: (11.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 2.11.93
 Replaces : 21.09.92
 Test oil : ISO-4113

Combination no. : 0 401 846 950

Injection pump
 Pump designation : PE6P110A720RS3289
 EP type number : 0 411 816 781
 Governor
 Governor design. : RQV200...1100PA555-5
 Governor no. : 0 421 813 943

Customer-spec. information
 Customer : SCANIA

Engine : DS11 63A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40
 : (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 17.1...17.3

100 s: (16.9...17.5)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 6.5...6.7

Del.quantity cm³/ : 1.9...2.5

100 s: (1.6...2.8)

Spread cm³ : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.70...1.10

2nd speed rpm : 350
 travel mm : 2.00...2.60

3rd speed rpm : 650
 travel mm : 4.90...5.50

4th speed rpm : 1145
 travel mm : 8.30...8.50

5th speed rpm : 1300
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 171.0...173.0
 1000 : (168.0...176.0)

Spread cm³ : 8.00
1000 : (12.0)

RATED SPEED

1st version

Control lever
position degrees: 112...120

Testing:

1st rack travel in: 11.30
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1280...1310
4th rack travel in: 1420
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:

Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 325
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 400...460

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 200
Rack travel in m: 11.70...11.80
3rd pressure hPa : 140
Rack travel in m: 10.65...10.95

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 1100
Del. quantity cm³/ : 160.0...168.0
1000 s: (158.0...170.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 112.0...116.0
1000 s: (110.0...118.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 240.0...290.0
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO
diaphragm.

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 2.12.93
 Replaces : 30.10.92
 Test oil : ISO-4113

Combination no. : 0 401 846 955

Injection pump
 Pump designation : PE6P120A32DRS3196
 EP type number : 0 411 826 763
 Governor
 Governor design. : RQ200/1100PA998
 Governor no. : 0 421 801 614

Customer-spec. information
 Customer : SCANIA

Engine : D5C9 10

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 13.2...13.4

100 s: (12.9...13.7)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm : 4.4...5.0

Del. quantity cm³/ : 1.4...1.8

100 s: (-)

Spread cm³ : 0.4

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.90...1.30

2nd speed rpm : 350

travel mm : 2.30...2.90

3rd speed rpm : 650

travel mm : 3.70...4.30

4th speed rpm : 1180

travel mm : 4.35...4.65

5th speed rpm : 1280

travel mm : 5.50...6.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del. quantity : 132.0...134.0

1000 : (129.0...137.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 16.5

Testing:

1st rack travel in: 9.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.7

Testing:

Speed rpm : 150
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 320...380

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in mm : 9.80...10.20
2nd pressure hPa : 350
Rack travel in mm : 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1100
Del. quantity cm³/ : 128.0...136.0
1000 s: (126.0...138.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 115.0...117.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Two-part control lever.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
Edition : 2.12.93
Replaces : 26.02.93
Test oil : ISO-4113

Combination no. : 0 401 846 956

Injection pump
Pump designation : PE6P120A320RS3196
EP type number : 0 411 826 763
Governor
Governor design. : RQV200...1100PA729-4
Governor no. : 0 421 813 950

Customer-spec. information
Customer : SCANIA

Engine : DSC9 10

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 2.30

Test nozzle holder
assembly : 1 688 901 104

Opening
pressure, bar : 250...253

Orifice plate
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.50...10.60

Del.quantity cm³/ : 13.2...13.4

100 s: (12.9...13.7)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 250.0
Rack travel in mm : 4.4...5.0
Del.quantity cm³/ : 1.3...1.9
100 s: (-)
Spread cm³ : 0.4
100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 0.70...1.10

2nd speed rpm : 350
travel mm : 2.00...2.60

3rd speed rpm : 650
travel mm : 4.90...5.50

4th speed rpm : 1145
travel mm : 8.30...8.50

5th speed rpm : 1250
travel mm : 9.20...9.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm : 1120
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 132.0...134.0
1000 : (129.0...137.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version

Control lever
position degrees: 112...120

Testing:

1st rack travel in: 9.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 56...66

Testing:

Speed rpm : 150
Minimum rack travel: 5.80
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 320...380

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.50...10.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 350
Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1100
Del. quantity cm³/ : 128.0...136.0
1000 s: (126.0...138.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 115.0...117.0
1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 110.0...130.0
1000 s: (106.0...134.0)
Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROEO
diaphragm.

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,2 c
 Edition : 02.12.93
 Replaces : 18.12.92
 Test oil : ISO-4113
 Combination no. : 0 401 846 960
 Injection pump
 Pump designation : PE6P110A32ORS3265
 EP type number : 0 411 816 778
 Governor
 Governor design. : RQV300...1100PA1019K
 Governor no. : 0 421 815 290

Customer-spec. information
 Customer : VME

Engine : TD102KTE

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.60...14.70

Del.quantity cm³/ : 19.2...19.4

100 s : (19.0...19.6)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm³/ : 2.5...2.9

100 s : (2.3...3.1)

Spread cm³ : 0.3

100 s : (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.90...1.40

2nd speed rpm : 406

travel mm : 2.32...2.82

3rd speed rpm : 590

travel mm : 3.97...4.47

4th speed rpm : 1080

travel mm : 7.65...8.15

5th speed rpm : 1156

travel mm : 8.83...9.33

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1260

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1500

Del.quantity : 192.0...194.0

1000 : (190.0...196.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 13.65
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1250...1278
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 200
Minimum rack travel: 6.40
Speed rpm : 300
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION
Speed rpm : 300...460

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.60...14.70
2nd speed rpm : 600
Rack travel in m: 13.90...14.10
3rd speed rpm : 720
Rack travel in m: 14.20...14.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1100
Pressure hPa : 1500
Rack travel mm : 14.60...14.70

Measurement
Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 11.00...11.20
2nd pressure hPa : 90
Rack travel in m: 11.30...11.40
3rd pressure hPa : 400
Rack travel in m: 14.20...14.40

START CUT-OUT

Speed 1/min : 250 (270)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 600
Del.quantity cm³/ : 188.0...192.0
1000 s: (186.0...194.0)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 135.0...137.0
1000 s: (132.0...140.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...170.0
1000 s: (136.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 25.0...29.0
1000 s: (23.0...31.0)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
Edition : 2.12.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 846 971
Injection pump
Pump designation : PE6P110A32ORS3302Z
EP type number : 0 411 816 789
Governor
Governor design. : RQ300/1000PA1012-1
Governor no. : 0 421 801 648

Customer-spec. information
Customer : DAF

Engine : LS 195 M

1st version kW : 195.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00x2.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 14.00...15.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10
& maximum rack tra: 13.5...14.5
Difference ° CS : 3.00...5.00

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 16.5...16.7

100 s: (16.2...16.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del.quantity cm3/ : 2.7...3.2

100 s: (2.5...3.5)

Spread cm3 : 0.5

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 165.0...167.0

1000 : (162.5...169.5)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.90
Speed rpm : 1045...1061
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:

Speed rpm : 200
Minimum rack travel: 11.00
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 340...380

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.90...14.00

Measurement

Speed 1/min : 600

1st pressure hPa : 480
Rack travel in m: 13.50...13.60
2nd pressure hPa : 340
Rack travel in m: 12.50...12.70
3rd pressure hPa : -
Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm³/ : 125.0...127.0
1000 s: (122.5...129.5)

BREAKAWAY

1s. version

1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1045...1061

H25

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...370.0
1000 s: (327.0...373.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
 Edition : 2.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 979
 Injection pump
 Pump designation : PE6P110A72ORS3243
 EP type number : 0 411 816 770
 Governor
 Governor design. : RQV250...1100PA413-6
 Governor no. : 0 421 813 898

Customer-spec. information
 Customer : SNF

Engine : WD615.63

1st version kW : 204.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 16.4...16.6

100 s: (16.1...16.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 250

Rack travel in mm : 4.3...4.7

Del.quantity cm³/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm³ : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.88...1.38

2nd speed rpm : 356

travel mm : 1.74...2.24

3rd speed rpm : 510

travel mm : 2.86...3.36

4th speed rpm : 816

travel mm : 5.10...5.60

5th speed rpm : 1157

travel mm : 8.26...8.76

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 10.45...13.05

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 164.0...166.0

1000 : (161.0...169.0)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 74...82

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.10
2nd pressure hPa : 500
Rack travel in m: 11.90...12.00
3rd pressure hPa : 325
Rack travel in m: 10.30...10.50

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700

Del.quantity cm3/ : 174.0...178.0
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 120.0...122.0
1000 s: (117.0...125.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 232.0...272.0
1000 s: (228.0...276.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
 Edition : 2.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : D 401 846 980
 Injection pump
 Pump designation : PE6P110A72ORS3243
 EP type number : 0 411 816 770
 Governor
 Governor design. : RQ300/1100PA412-9
 Governor no. : 0 421 801 696

Customer-spec. information
 Customer : SNF

Engine : WD615.42/43

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 15.4...15.6

100 s : (15.1...15.9)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 300

Rack travel in mm : 3.2...3.8

Del. quantity cm³/ : 1.0...1.6

100 s : (0.7...1.9)

Spread cm³ : 0.4

100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degres: -1

Speed rpm : 600

Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 154.0...156.0

1000 : (151.0...159.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1157...1173

2nd rack travel in: 4.00

Speed rpm : 1250...1280

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 3.50

Testing:
Speed rpm : 200
Minimum rack trave: 5.00
Speed rpm : 300
Rack travel in mm : 3.40...3.60
Rack travel in mm : 2.00
Speed rpm : 340...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.75...12.85

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.65...9.85
2nd pressure hPa : 310
Rack travel in m: 10.05...10.15
3rd pressure hPa : 580
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 167.0...173.0
1000 s: (164.0...176.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1157...1173

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 250.0...270.0
1000 s: (246.0...274.0)
Rack travel in mm : 17.50...18.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
 Edition : 2.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 981
 Injection pump
 Pump designation : PE6P110A720RS3243
 EP type number : 0 411 816 770
 Governor
 Governor design. : RQV250...1100PA413-7
 Governor no. : 0 421 814 073

Customer-spec. information
 Customer : SNF

Engine : WD615.42/43

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 12.75...12.85
 Del.quantity cm³/ : 15.4...15.6
 100 s: (15.1...15.9)
 Spread cm³ : 0.4
 100 s: (0.7)
 2nd speed rpm : 250
 Rack travel in mm : 3.2...3.8
 Del.quantity cm³/ : 1.0...1.6
 100 s: (0.7...1.9)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.93...1.33
 2nd speed rpm : 356
 travel mm : 1.74...2.24
 3rd speed rpm : 510
 travel mm : 2.86...3.36
 4th speed rpm : 824
 travel mm : 5.16...5.66
 5th speed rpm : 1177
 travel mm : 8.60...8.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1260
 Rack travel in mm : 10.50...13.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100
 Aneroid pressure h: 900
 Del.quantity : 154.0...156.0
 1000 : (151.0...165.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 102...110

Testing:
1st rack travel in: 11.80
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76

Testing:
Speed rpm : 150
Minimum rack travel: 5.50
Speed rpm : 250
Rack travel in mm : 3.40...3.60

CONSTANT REGULATION
Speed rpm : 250...350

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.75...12.85
2nd speed rpm : 700
Rack travel in m: 12.70...12.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.75...12.85

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.65...9.85
2nd pressure hPa : 310
Rack travel in m: 10.05...10.15
3rd pressure hPa : 580
Rack travel in m: 12.30...12.50

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 167.0...173.0
1000 s: (164.0...176.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 250.0...270.0
1000 s: (246.0...274.0)
Rack travel in mm : 17.50...18.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 3.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 982
 Injection pump
 Pump designation : PE6P110A320RS3302X
 EP type number : 0 411 816 794
 Governor
 Governor design. : RQ300/1000PA1012-1
 Governor no. : 0 421 801 648

Customer-spec. information
 Customer : DAF

Engine : LS 160 M

1st version kw : 160.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 14.00...15.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 3.90...4.10
 & maximum rack tra: 12.5...13.5
 Difference ° CS : 3.00...5.00

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 14.4...14.6

100 s: (14.1...14.8)

Spread cm³ : 0,4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.3

Del.quantity cm³/ : 2.7...3.2

100 s: (2.5...3.5)

Spread cm³ : 0,5

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 144.0...146.0

1000 : (141.5...148.5)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.00
Speed rpm : 1045...1061
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1250
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.2

Testing:

Speed rpm : 200
Minimum rack travel: 11.00
Speed rpm : 300
Rack travel in mm : 7.10...7.30
Rack travel in mm : 2.00
Speed rpm : 345...385

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 850
Pressure hPa : 1000
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 600

1st pressure hPa : 310
Rack travel in m: 12.60...12.70
2nd pressure hPa : 220
Rack travel in m: 11.90...12.10
3rd pressure hPa : -
Rack travel in m: 11.50...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 110.5...112.5
1000 s: (108.0...115.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1045...1061

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...370.0
1000 s: (327.0...373.0)
Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VAL
 Edition : 3.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 846 984
 Injection pump
 Pump designation : PE6P120A320RS3327
 EP type number : 0 411 826 811
 Governor
 Governor design. : RQV325...1050PA11077
 Governor no. : 0 421 814 077

Customer-spec. information
 Customer : VALMET

Engine : 612 DWI

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 103

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.60...11.70

Del. quantity cm³/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325

Rack travel in mm : 4.0...4.2

Del. quantity cm³/ : 1.0...1.5

100 s: (0.8...1.8)

Spread cm³ : 0.5

100 s: (0.7)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 0.95...1.45

2nd speed rpm : 411

travel mm : 1.81...2.31

3rd speed rpm : 470

travel mm : 2.54...3.04

4th speed rpm : 729

travel mm : 4.36...4.86

5th speed rpm : 1107

travel mm : 8.28...8.78

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del. quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 10.65
Speed rpm : 1090...1200
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 77...85

Testing:
Speed rpm : 225
Minimum rack travel: 6.70
Speed rpm : 325
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION
Speed rpm : 335...405

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 11.60...11.70
2nd speed rpm : 1050
Rack travel in m: 11.55...11.75

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 11.55...11.75

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 360
Rack travel in m: 9.40...9.50
3rd pressure hPa : 580
Rack travel in m: 12.30...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050

Del.quantity cm³/ : 184.0...190.0
1000 s: (181.0...193.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 133.0...135.0
1000 s: (130.0...138.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.65
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 250.0...270.0
1000 s: (246.0...274.0)
Rack travel in mm : 17.50...18.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.50...6.70

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 13.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 849 732
 Injection pump
 Pump designation : PE10P120A520/4LS3830
 EP type number : 0 411 829 704
 Governor
 Governor design. : RQV250...1150PA670-4
 Governor no. : 0 421 813 582

Customer-spec. information
 Customer : MAN

Engine : D2840LE

1st version kW : 441.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 10- 9- 4- 1- 8- 7-
 : 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 : 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 12.20...12.30
 Del.quantity cm³/ : 20.7...20.9
 100 s: (20.4...21.2)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 7.0...7.2
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 2.00...2.40
 2nd speed rpm : 750
 travel mm : 6.10...6.30
 3rd speed rpm : 1150
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1150
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 1000
 Del.quantity : 207.0...209.0
 1000 : (204.0...212.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...1246

Testing:
1st rack travel in: 11.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1315...1345
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 64...72

Testing:
Speed rpm : 100
Minimum rack travel: 8.60
Speed rpm : 250
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 400...460

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.50...8.60
2nd pressure hPa : 275
Rack travel in m: 8.80...8.90
3rd pressure hPa : 600
Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm³/ : 209.0...215.0
1000 s: (206.0...218.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
APPLICATION : MAN-NR. 2-7779

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 03.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 849 756
 Injection pump
 Pump designation : PE10P120A520/4LS3860
 EP type number : 0 411 829 710
 Governor
 Governor design. : RQV300...900PA668-9
 Governor no. : 0 421 814 051

Customer-spec. information
 Customer : MAN

Engine : D2840LE

1st version kW : 365.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)

Rack travel in mm : 9.00...12.00

Firing order : 10- 9- 4- 1- 8- 7-
 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 19.8...20.0

100 s: (19.6...20.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...5.0

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.96...1.16

2nd speed rpm : 440

travel mm : 3.24...3.64

3rd speed rpm : 710

travel mm : 5.39...5.79

4th speed rpm : 970

travel mm : 8.36...8.56

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1015

Rack travel in mm : 8.10...10.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 198.0...200.0

1000 : (195.0...203.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 9.40
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 150
Minimum rack trave: 5.70
Speed rpm : 250
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 340...400

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 190.0...210.0
1000 s: (186.0...214.0)

Remarks:
: MAN-NR. 3-7251

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 03.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 346
 Injection pump
 Pump designation : PE6P110A320RS497
 EP type number : 0 411 816 165
 Governor
 Governor design. : RSV250...1200P1A374-
 13
 Governor no. : 0 421 833 424

Customer-spec. information
 Customer : PENTA

Engine : T1D 72A

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

P_r stroke mm : 3.00...3.10
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 13.8...14.0

100 s : (13.5...14.3)

Spread cm³ : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 5.1...5.3

Del. quantity cm³/ : 1.7...2.1

100 s : (1.4...2.3)

Spread cm³ : 0.3

100 s : (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del. quantity : 138.0...140.0

1000 : (135.0...143.0)

Spread cm³ : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Testing:

1st rack travel in: 11.85

Speed rpm : 1210...1220

2nd rack travel in: 4.00

Speed rpm : 1265...1295

4th rack travel in: 1400

Speed rpm : 0.30...1.40
LOW IDLE 1
Control lever
position degrees: 73...81
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack trave: 20.00
Speed rpm : 250
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 310...370

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.50
2nd pressure hPa : 310
Rack travel in m: 9.40...9.50
3rd pressure hPa : 910
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 76.0...78.0
1000 s: (73.0...81.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.85
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 185.0...215.0
1000 s: (181.0...219.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 200
Rack travel in mm : 5.20...5.40
Del.quantity cm³/ : 17.0...21.0
1000 s: (14.5...23.5)
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN 12,2 d
 Edition : 3.12.93
 Replaces : 16.01.91
 Test oil : ISO-4113
 Combination no. : 0 401 876 780
 Injection pump
 Pump designation : PE6P120A320RS3206-1
 EP type number : 0 411 826 775
 Governor
 Governor design. : RSV250...900P4A550
 Governor no. : 0 421 833 354

Customer-spec. information
 Customer : PENTA

Engine : TID121LP
 1st version kw : 295.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 019
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.20...12.30
 Del.quantity cm³/ : 29.8...30.0
 100 s: (29.5...30.3)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm³/ : 2.0...2.6
 100 s: (1.7...2.9)
 Spread cm³ : 0.5
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 298.0...300.0
 1000 : (295.0...303.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 103...111

Testing:
 1st rack travel in: 11.20

Speed rpm : 945...955
2nd rack travel in: 4.00
Speed rpm : 985...1015
4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3
Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 340...400

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 945...955

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 265.0...295.0
1000 s: (261.0...299.0)
Rack travel in mm : 20.00...21.00

Remarks:

:

Delivery-valve spring pre-tension =
2.40...2.60 mm.
Permissible alteration from 2.20...2.90
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 3.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 792
 Injection pump
 Pump designation : PE6P120A320RS3313
 EP type number : 0 411 826 807
 Governor
 Governor design. : RSV350...1100P8A558
 Governor no. : 0 421 833 397

Customer-spec. information
 Customer : SCANIA

Engine : D9

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

 Rack travel in mm : 11.60...11.70

 Del.quantity cm3/ : 14.3...14.5
 100 s: (14.0...14.8)

 Spread cm3 : 0.8
 100 s: (1.2)

2nd speed rpm : 350.0
 Rack travel in mm : 4.6...4.8
 Del.quantity cm3/ : 1.5...2.1
 100 s: (1.2...2.4)
 Spread cm3 : 0.4
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1500
 Del.quantity : 143.0...145.0
 1000 : (140.0...148.0)
 Spread cm3 : 8.00
 1000 : (12.0)

RATED SPEED

1st version
 Control lever
 position degrees: 109...117

Testing:
 1st rack travel in: 10.60
 Speed rpm : 1140...1150
 2nd rack travel in: 4.00

Speed rpm : 1220...1250
3rd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack trave: 10.10
Speed rpm : 350
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 505...565

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.50
2nd pressure hPa : 280
Rack travel in m: 11.10...11.20
3rd pressure hPa : 210
Rack travel in m: 10.55...10.85

FUEL DELIVERY CHARACTERISTICS

1st version:

Aneroid pressure h: 1500
Speed rpm : 1100
Del.quantity cm3/ : 141.0...149.0
1000 s: (139.0...151.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 105.0...107.0
1000 s: (102.0...110.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 80.0...120.0
1000 s: (76.0...124.0)
Rack travel in mm : 10.10...10.50

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.60...4.80

Remarks:

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
Edition : 3.12.93
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 876 793
Injection pump
Pump designation : PE6P120A32ORS3314
EP type number : 0 411 826 806
Governor
Governor design. : RSV350...1100P1A559
Governor no. : 0 421 833 389

Customer-spec. information
Customer : SCANIA

Engine : D9

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder
assembly : 1 688 901 104
Opening
pressure, bar : 250...253
Orifice plate
diameter mm : 0,7

Test lines : 1 680 750 008
Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 4.40...4.50
(4.35...4.55)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 11.40...11.50
Del.quantity cm3/ : 15.1...15.3
100 s: (14.8...15.6)
Spread cm3 : 0.8
100 s: (1.2)

2nd speed rpm : 500.0
Rack travel in mm : 9.8...10.20
Del.quantity cm3/ : 11.5...11.7
100 s: (11.2...12.0)
Spread cm3 : 0.4
100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 1500
Del.quantity : 151.0...153.0
1000 : (148.0...156.0)
Spread cm3 : 8.00
1000 : (12.0)

RATED SPEED

1st version
Control lever
position degrees: 86...94

Testing:
1st rack travel in: 10.45
Speed rpm : 750...755
2nd rack travel in: 4.00

Speed rpm : 788...797
4th rack travel in: 850
Speed rpm : 0.30...1.40

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 11.40...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.80...10.20

2nd pressure hPa : 250

Rack travel in m: 10.90...11.00

3rd pressure hPa : 180

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 115.0...117.0

1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.45

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 70.0...110.0

1000 s: (66.0...114.0)

Rack travel in mm : 9.80...10.20

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4.60...4.80

Remarks:

:

Start-of-delivery setting with ROBO
diaphragm.

J19

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL
Edition : 03.12.92
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 876 798
Injection pump
Pump designation : PE6P110A32ORS3109-2
EP type number : 0 411 816 792
Governor
Governor design. : RSV200...900P1A568-2
Governor no. : 0 421 833 417

Customer-spec. information
Customer : VOLVO

Engine : TD 101 GE

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
: (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 13.50...13.60
Del.quantity cm3/ : 18.3...18.5
100 s : (18.1...18.7)
Spread cm3 : 0.4
100 s : (0.7)

2nd speed rpm : 250.0
Rack travel in mm : 4.2...4.4
Del.quantity cm3/ : 1.7...2.1
100 s : (1.5...2.3)
Spread cm3 : 0.3
100 s : (0.6)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 183.0...185.0
1000 : (181.0...187.0)
Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 90...98

Testing:
1st rack travel in: 12.55
Speed rpm : 865...875
2nd rack travel in: 4.00
Speed rpm : 915...945
4th rack travel in: 1070
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 66...74

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 3.7

Testing:

Speed rpm : 100

Minimum rack trave: 20.00

Speed rpm : 250

Rack travel in mm : 4.20...4.40

Rack travel in mm : 2.00

Speed rpm : 270...330

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.55

Speed rpm : 865...875

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 165.0...185.0

1000 s: (161.0...189.0)

Rack travel in mm : 20.00...21.00

Remarks:

:

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 3.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 799
 Injection pump
 Pump designation : PE6P120A320RS3206-4
 EP type number : 0 411 826 810
 Governor
 Governor design. : RSV250...900P4A55D
 Governor no. : 0 421 833 354

Customer-spec. information
 Customer : PENTA

Engine : TD 121 G

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 019
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 11.30...11.40
 Del. quantity cm³/ : 24.5...24.7
 100 s : (24.2...25.0)
 Spread cm³ : 0.5
 100 s : (0.9)
 2nd speed rpm : 300.0
 Rack travel in mm : 4.7...4.9
 Del. quantity cm³/ : 2.0...2.6
 100 s : (1.7...2.9)
 Spread cm³ : 0.5
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del. quantity : 245.0...247.0
 1000 : (242.0...250.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 103...111

Testing:
 1st rack travel in: 10.35
 Speed rpm : 945...955
 2nd rack travel in: 4.00
 Speed rpm : 985...1015

4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3

Testing:

Speed rpm : 100
Minimum rack trave: 20.00
Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 340...400

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.35
Speed rpm : 945...955

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 265.0...295.0
1000 s: (261.0...299.0)
Rack travel in mm : 20.00...21.00

Remarks:

:

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 3.12.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 401 876 800

Injection pump
 Pump designation : PE6P120A320RS3313
 EP type number : 0 411 826 807
 Governor
 Governor design. : RSV350...1050P8A558
 -1
 Governor no. : 0 421 833 423

Customer-spec. information
 Customer : SCANIA

Engine : D9

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 15.9...16.1

100 s: (15.6...16.4)

Spread cm3 : 0.8

100 s: (1.2)

2nd speed rpm : 350.0
 Rack travel in mm : 4.6...4.8
 Del.quantity cm3/ : 1.5...2.1
 100 s: (1.2...2.4)

Spread cm3 : 0.4
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1500
 Del.quantity : 159.0...161.0
 1000 : (156.0...164.0)

Spread cm3 : 8.00
 1000 : (12.0)

RATED SPEED

1st version
 Control lever
 position degrees: 102...110

Testing:
 1st rack travel in: 10.10
 Speed rpm : 1090...1100

2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.2

Testing:
Speed rpm : 100
Minimum rack travel: 9.80
Speed rpm : 350
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 505...565

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 280
Rack travel in m: 11.10...11.20
3rd pressure hPa : 180
Rack travel in m: 10.35...10.65

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050
Del.quantity cm³/ : 132.0...140.0
1000 s: (130.0...142.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 105.0...107.0
1000 s: (102.0...110.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 80.0...120.0
1000 s: (76.0...124.0)
Rack travel in mm : 9.80...10.20

Remarks:

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 8.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 801
 Injection pump
 Pump designation : PE6P120A320RS3189
 EP type number : 0 411 826 759
 Governor
 Governor design. : RSV250...900P1A421
 -11
 Governor no. : 0 421 833 425
 Customer-spec. information
 Customer : PENTA
 Engine : TWD 710P

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.60...2.70
 : (2.55...2.75)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 7.60...7.70
 Del.quantity cm³/ : 14.5...14.7
 100 s: (14.2...15.0)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.4...4.8
 Del.quantity cm³/ : 2.0...2.6
 100 s: (1.8...2.8)
 Spread cm³ : 0.5
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 6.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 145.0...147.0
 1000 : (142.0...150.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 97...105

Testing:
 1st rack travel in: 6.65
 Speed rpm : 920...930
 2nd rack travel in: 4.00

Speed rpm : 945...975
4th rack travel in: 1070
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.1
Speed rpm : 250
Rack travel in mm : 4.40...4.80
Rack travel in mm : 2.00
Speed rpm : 340...400

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 6.65
Speed rpm : 920...930

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 8.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 376 302
 Injection pump
 Pump designation : PE6P120A320RS3206-1
 EP type number : 0 411 826 775
 Governor
 Governor design. : RSV250...900P4A550
 -1
 Governor no. : 0 421 833 427
 Customer-spec. information
 Customer : PENTA
 Engine : TWD1210P

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 11.00...11.10
 Del.quantity cm³/ : 24.0...24.2
 100 s : (23.7...24.5)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm³/ : 2.0...2.6
 100 s : (1.8...2.8)
 Spread cm³ : 0.5
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 240.0...242.0
 1000 : (237.0...245.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control Lever
 position degrees: 102...110

Testing:
 1st rack travel in: 10.05
 Speed rpm : 920...930
 2nd rack travel in: 4.00

Speed rpm : 955...985
4th rack travel in: 1100
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.3
Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 340...400

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.05
Speed rpm : 920...930

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PEN
 Edition : 8.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 401 876 803
 Injection pump
 Pump designation : PE6P120A32ORS3189
 EP type number : 0 411 826 759
 Governor
 Governor design. : RSV350...1250POA578
 Governor no. : 0 421 833 434

Customer-spec. information
 Customer : PENTA

Engine : TWD 630ME

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 101
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,6
 Test lines : 1 680 750 008
 Outside diameter x Wall thickness x Length mm : 6.00x2.00x1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 2.40...2.50
 : (2.35...2.55)
 Rack travel in mm : 9.7 ...12.00

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 11.70...11.80
 Del. quantity cm³/ : 13.2...13.4
 100 s: (13.0...13.6)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 5.3...5.7
 Del. quantity cm³/ : 1.7...2.1
 100 s: (1.4...2.4)
 Spread cm³ : 0.5
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1200
 Del. quantity : 145.0...147.0
 1000 : (142.0...150.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 86...94

Testing:
 1st rack travel in: 10.75
 Speed rpm : 1265...1275
 2nd rack travel in: 4.00

Speed rpm : 1290...1320
4th rack travel in: 1340
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 58...66
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0
Speed rpm : 350
Rack travel in mm : 5.3...5.780
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.40
2nd pressure hPa : 240
Rack travel in m: 9.35...9.45

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 79.0...81.0
1000 s: (76.0...84.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.75
Speed rpm : 1265...1275

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 08.12.93
 Replaces : 21.08.92
 Test oil : ISO-4113
 Combination no. : 0 401 878 717
 Injection pump
 Pump designation : PE8P110A320LS3853-1
 EP type number : 0 411 818 726
 Governor
 Governor design. : RSV400...1000P1A554
 Governor no. : 0 421 833 376

Customer-spec. information
 Customer : LIEBHERR

Engine : D 9308 TI

1st version kw : 288.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)
 Rack travel in mm : 9.00...12.00

K04

Firing order : 1- 8- 7- 2- 6- 3-
 5- 4

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 14.60...14.70
 Del. quantity cm³/ : 19.6...19.8
 100 s : (19.3...20.1)
 Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 400.0
 Rack travel in mm : 5.9...6.1
 Del. quantity cm³/ : 1.2...1.8
 100 s : (0.9...2.1)
 Spread cm³ : 0.6
 100 s : (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1500
 Del. quantity : 196.0...198.0
 1000 : (193.0...201.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 96...104

Testing:
 1st rack travel in: 13.65
 Speed rpm : 940...950
 2nd rack travel in: 4.00
 Speed rpm : 985...1015

3rd rack travel in: 4.00
Speed rpm : 1015...1045
4th rack travel in: 1100
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 490...550

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 14.60...14.70
2nd speed rpm : 500
Rack travel in m: 14.55...14.75
3rd speed rpm : 350
Rack travel in m: 15.80...16.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1500
Rack travel mm : 14.60...14.70

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 13.55...13.75
2nd pressure hPa : 780
Rack travel in m: 14.35...14.45
3rd pressure hPa : 710
Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 171.0...173.0
1000 s: (168.0...176.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

K05

1mm rack travel less than
full load rack tr: 13.65
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 6.00
1000 s: (10.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIE
 Edition : 08.12.93
 Replaces : 27.11.92
 Test oil : ISO-4113
 Combination no. : 0 401 878 717B
 Injection pump
 Pump designation : PE8P110A32OLS3853
 EP type number : 0 411 818 720
 Governor
 Governor design. : RSV400...1000P1A554
 Governor no. : 0 421 833 376

Customer-spec. information
 Customer : LIEBHERR

Engine : D 9308 T

1st version kw : 255.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 3-
 5- 4

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 13.40...13.50
 Del.quantity cm³/ : 16.6...16.8
 100 s: (16.3...17.1)
 Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 400.0
 Rack travel in mm : 5.9...6.1
 Del.quantity cm³/ : 1.2...1.8
 100 s: (0.9...2.1)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1500
 Del.quantity : 166.0...168.0
 1000 : (163.0...171.0)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
 Control lever
 position degrees: 96...104

Testing:
 1st rack travel in: 12.45
 Speed rpm : 940...950
 2nd rack travel in: 4.00
 Speed rpm : 985...1015

3rd rack travel in: 4.00
Speed rpm : 1015...1045
4th rack travel in: 1100
Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.7
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.40...13.50
2nd speed rpm : 500
Rack travel in m: 13.40...13.60
3rd speed rpm : 350
Rack travel in m: 14.60...15.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1500
Rack travel mm : 13.40...13.50

Measurement

Speed 1/min : 550
1st pressure hPa : -
Rack travel in m: 12.45...12.65
2nd pressure hPa : 685
Rack travel in m: 13.15...13.25
3rd pressure hPa : 620
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 152.0...154.0
1000 s: (149.0...157.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

K07

1mm rack travel less than
full load rack tr: 12.45
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm3 : 6.00
1000 s: (10.00)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 e1
 Edition : 08.12.93
 Replaces : 11.01.93
 Test oil : ISO-4113

Combination no. : 0 402 035 028

Injection pump
 Pump designation : PES5P120A720/3LS528
 EP type number : 0 412 025 022
 Governor
 Governor design. : RQV325...1000PA876
 -10
 Governor no. : 0 421 813 900

Customer-spec. information
 Customer : MAN

Engine : D2865LF/LU05

1st version kW : 198.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 13.00...14.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm³/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.7

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 9.60...9.80

2nd speed rpm : 325
 travel mm : 0.70...1.10

3rd speed rpm : 550
 travel mm : 3.50...4.10

4th speed rpm : 800
 travel mm : 6.50...6.90

5th speed rpm : 1300
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000
Del.quantity : 220.0...222.0
1000 : (217.0...225.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 296...304

Testing:
1st rack travel in: 10.60
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 252...260

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.30...4.70

CONSTANT REGULATION
Speed rpm : 340...460

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 150
Rack travel in m: 9.40...9.50
3rd pressure hPa : 390
Rack travel in m: 10.90...11.20

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 750
Del.quantity cm³/ : 217.0...223.0
1000 s: (214.0...226.0)
Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm³/ : 209.0...217.0
1000 s: (206.0...220.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.70
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks: : MAN-NR. 3-7122

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 d1
 Edition : 08.12.93
 Replaces : 11.01.93
 Test oil : ISO-4113
 Combination no. : 0 402 035 029
 Injection pump
 Pump designation : PES5P120A720/3LS528
 EP type number : 0 412 025 022
 Governor
 Governor design. : RQ325/1000PA813-20
 Governor no. : 0 421 801 567

Customer-spec. information
 Customer : MAN

Engine : D2865LF/LU05

1st version kW : 198.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 13.00...14.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.3...4.7

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.60

Speed rpm : 1045...1061
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.30...4.70
Rack travel in mm : 2.00
Speed rpm : 360...400

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.10...12.20
2nd speed rpm : 825
Rack travel in m: 12.30...12.50
3rd speed rpm : 550
Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.60...11.70

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 9.00...9.20
2nd pressure hPa : 150
Rack travel in m: 9.40...9.50
3rd pressure hPa : 390
Rack travel in m: 10.90...11.20

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 750

Del.quantity cm3/ : 217.0...223.0
1000 s: (214.0...226.0)
Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm3/ : 209.0...217.0
1000 s: (206.0...220.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.70
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7121
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 5
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 u1
 Edition : 08.12.93
 Replaces : 26.02.93
 Test oil : ISO-4113
 Combination no. : 0 402 036 740
 Injection pump
 Pump designation : PES6P120A720/3LS3255
 EP type number : 0 412 026 739
 Governor
 Governor design. : RQ300/1000PA813-13
 Governor no. : 0 421 801 529

Customer-spec. information
 Customer : MAN

Engine : D2866LFC3

1st version kW : 273.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 14.50...15.50

Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm³/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.9...5.3

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.00

Speed rpm : 1045...1061

2nd rack travel in: 4.00

Speed rpm : 1160...1190

3rd rack travel in: 4.00

4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.1

Testing:

Speed rpm : 200
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 360...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 15.00...15.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.70...11.90
2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 13.70...14.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del. quantity cm³/ : 241.0...245.0
1000 s: (238.0...248.0)
Spread cm³ : 8.00
1000 s: (12.)

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 134.0...136.0
1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 1045...1061

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.30
Del. quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 0-7050

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SAC 10,8 a
 Edition : 08.12.93
 Replaces : 21.02.92
 Test oil : ISO-4113

Combination no. : 0 402 036 748

Injection pump
 Pump designation : PES6P120A320/3RS3297
 EP type number : 0 412 026 753
 Governor
 Governor design. : RQV375...1000PA1022
 Governor no. : 0 421 813 981

Customer-spec. information
 Customer : SACM

Engine : UD18L6R3D

1st version kW : 219.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 20.9...21.1
 100 s: (20.6...21.4)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 375.0
 Rack travel in mm : 4.9...5.3
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 8.30...8.50

2nd speed rpm : 375
 travel mm : 1.70...2.10

3rd speed rpm : 750
 travel mm : 5.60...6.20

4th speed rpm : 1350
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1150
 Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del.quantity : 209.0...211.0
 1000 : (206.0...214.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 10.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76

Testing:
Speed rpm : 100
Minimum rack trave: 6.60
Speed rpm : 375
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION
Speed rpm : 370...500

START CUT-OUT

Speed 1/min : 295 (315)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 390.0...420.0
1000 s: (386.0...424.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375
Rack travel in mm : 4.90...5.30
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 27.09.93
 Replaces : 01.93
 Test oil : ISO-4113
 Combination no. : 0 402 036 749
 Injection pump
 Pump designation : PES6P110A12ORS3286
 EP type number : 0 412 016 737
 Governor
 Governor design. : RQV350...1150PA1014
 -2K
 Governor no. : 0 421 815 296

Customer-spec. information
 Customer : CDC

Engine : 6CTA-A

1st version kW : 168.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.20...3.30
 : (3.15...3.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 15.40...15.50
 Del. quantity cm³/ : 15.3...15.5
 100 s: (15.1...15.7)
 Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 350.0
 Rack travel in mm : 5.9...6.1
 Del. quantity cm³/ : 1.9...2.3
 100 s: (1.6...2.5)
 Spread cm³ : 0.6
 100 s: (0.9)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 2.10...2.40
 2nd speed rpm : 450
 travel mm : 3.40...3.80
 3rd speed rpm : 900
 travel mm : 5.60...6.00
 4th speed rpm : 1200
 travel mm : 8.10...8.30
 5th speed rpm : 1400
 travel mm : 10.20...10.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200

Del. quantity : 153.0...155.0
1000 : (151.0...157.0)
Spread cm³ : 4.00
1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 108...116

Testing:

1st rack travel in: 14.20
Speed rpm : 1215...1225
2nd rack travel in: 4.00
Speed rpm : 1380...1410
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:

Speed rpm : 275
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 350...650

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 15.40...15.50
2nd speed rpm : 750
Rack travel in m: 14.10...14.50
3rd speed rpm : 1150
Rack travel in m: 15.20...15.40
4th speed rpm : 650
Rack travel in m: 13.90...14.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 15.40...15.50

Measurement

Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 8.90...9.30
2nd pressure hPa : 290

Rack travel in m: 10.60...10.70
3rd pressure hPa : 600
Rack travel in m: 13.60...14.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del. quantity cm³/ : 154.0...158.0
1000 s: (152.0...160.0)
Spread cm³ : 8.00
1000 s: (12.)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 74.5...78.5
1000 s: (72.5...80.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 1215...1225

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.00...12.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del. quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm³ : 6.00
1000 s: (9.00)

Remarks:

: C.D.C. # 3921971
Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM
 Edition : 27.09.93
 Replaces : 01.93
 Test oil : ISO-4113

Combination no. : 0 402 036 750

Injection pump
 Pump designation : PES6P110A12DRS3286
 EP type number : 0 412 016 737
 Governor
 Governor design. : RQV350...1150PA1014
 -3K
 Governor no. : 0 421 815 298

Customer-spec. information
 Customer : CDC

Engine : 6CTA-A

1st version kW : 156.5
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.20...3.30
 : (3.15...3.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

 Rack travel in mm : 14.60...14.70

 Del. quantity cm³/ : 14.3...14.5
 100 s: (14.1...14.7)

 Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 350.0
 Rack travel in mm : 5.9...6.1
 Del. quantity cm³/ : 1.9...2.3
 100 s: (1.6...2.5)
 Spread cm³ : 0.6
 100 s: (0.9)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 2.10...2.40
 2nd speed rpm : 450
 travel mm : 3.40...3.80
 3rd speed rpm : 900
 travel mm : 5.60...6.00
 4th speed rpm : 1200
 travel mm : 8.10...8.30
 5th speed rpm : 1400
 travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del. quantity : 143.5...145.5
 1000 : (141.5...147.5)
 Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version
Control lever
position degrees: 105...113

Testing:

1st rack travel in: 13.40
Speed rpm : 1220...1230
2nd rack travel in: 4.00
Speed rpm : 1365...1395
4th rack travel in: 1500
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 63...71

Testing:

Speed rpm : 275
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 350...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 14.60...14.70
2nd speed rpm : 750
Rack travel in m: 13.50...13.70
3rd speed rpm : 1150
Rack travel in m: 14.40...14.60
4th speed rpm : 650
Rack travel in m: 13.20...13.60

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 1100
Pressure hPa : 1200
Rack travel mm : 14.60...14.70

Measurement

Speed 1/min : 1100

1st pressure hPa : -
Rack travel in m: 8.90...9.30
2nd pressure hPa : 290
Rack travel in m: 10.60...10.70
3rd pressure hPa : 600
Rack travel in m: 13.60...14.00

START CUT-OUT

K19

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 139.0...143.0
1000 s: (137.0...145.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 74.5...78.5
1000 s: (72.5...80.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1220...1230

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (130.0...180.0)
Rack travel in mm : 10.00...12.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)
Spread cm³ : 6.00
1000 s: (9.00)

Remarks:

: C.D.C. # 3921972

Start-of-delivery mark = 5.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 m
 Edition : 09.12.93
 Replaces : 31.01.92
 Test oil : ISO-4113

Combination no. : 0 402 046 344

Injection pump
 Pump designation : PES6P120A32ORS3277
 EP type number : 0 412 026 747
 Governor
 Governor design. : RQV275...1050PA995
 Governor no. : 0 421 813 929

Customer-spec. information
 Customer : RVI

Engine : MIDR 06 20 45

1st version kW : 222.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 9.80...9.90

Del.quantity cm³/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.65...5.85

Del.quantity cm³/ : 2.1...2.7

100 s: (1.8...3.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1130

travel mm : 8.20...8.40

2nd speed rpm : 275

travel mm : 0.70...1.10

3rd speed rpm : 500

travel mm : 3.50...4.10

4th speed rpm : 750

travel mm : 5.30...5.70

5th speed rpm : 1450

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1000

Del.quantity : 184.0...186.0

1000 : (181.0...189.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 296...304

Testing:

1st rack travel in: 8.80
Speed rpm : 1135...1145
2nd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 244...252

Testing:

Speed rpm : 200
Minimum rack travel: 7.45
Speed rpm : 275
Rack travel in mm : 5.65...5.85

CONSTANT REGULATION

Speed rpm : 310...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 9.80...9.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 7.85...8.05
2nd pressure hPa : 360
Rack travel in m: 9.25...9.35
3rd pressure hPa : 200
Rack travel in m: 8.35...8.55

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050

Del. quantity cm³/ : 172.0...178.0
1000 s: (169.0...181.0)

Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 109.0...111.0
1000 s: (106.0...114.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.80
Speed rpm : 1135...1145

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 125.0...155.0
1000 s: (121.0...159.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.50...5.90
Del. quantity cm³/ : 21.0...27.0
1000 s: (18.0...30.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 f2
Edition : 14.1.94
Replaces : 03.12.92
Test oil : ISO-4113

Combination no. : 0 402 046 791

Injection pump
Pump designation : PES6P120A320RS3139
EP type number : 0 412 026 718
Governor
Governor design. : RQV275...950PA728-4
Governor no. : 0 421 813 678

Customer-spec. information
Customer : RVI

Engine : MIDR 063540 H

1st version kW : 264.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 089

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.6...6.0

Del.quantity cm3/ : 2.4...2.8

100 s: (2.1...3.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.30...1.70

2nd speed rpm : 450
travel mm : 3.30...3.70

3rd speed rpm : 800
travel mm : 5.60...6.00

4th speed rpm : 950
travel mm : 6.70...6.90

5th speed rpm : 1500
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 212.0...214.0

1000 : (209.0...217.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:

1st rack travel in: 12.30
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17

Testing:

Speed rpm : 200
Minimum rack travel: 7.60
Speed rpm : 275
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 295...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.50
2nd pressure hPa : 200
Rack travel in m: 9.90...10.00
3rd pressure hPa : 660
Rack travel in m: 12.20...12.50

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950

Del. quantity cm³/ : 210.0...216.0
1000 s: (207.0...219.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 118.0...120.0
1000 s: (115.0...123.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 150.0...180.0
1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.60...6.00
Del. quantity cm³/ : 24.0...28.0
1000 s: (21.0...31.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Start-of-delivery mark 9° cam angle
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 r
 Edition : 09.12.93
 Replaces : 03.04.92
 Test oil : ISO-4113

Combination no. : 0 402 046 829

Injection pump
 Pump designation : PES6P120A32ORS3284
 EP type number : 0 412 026 749
 Governor
 Governor design. : RQV275...1C50PA995-1
 Governor no. : 0 421 813 941

Customer-spec. information
 Customer : RVI

Engine : MIDR 062045 B/3

1st version kW : 186.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm: 10.50...10.60

Del.quantity cm³/ : 14.8...15.0

100 s: (14.5...15.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.9...5.3

Del.quantity cm³/ : 2.2...2.6

100 s: (1.9...2.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1130

travel mm : 8.10...8.30

2nd speed rpm : 275

travel mm : 0.70...0.90

3rd speed rpm : 450

travel mm : 2.80...3.40

4th speed rpm : 750

travel mm : 5.50...5.90

5th speed rpm : 1450

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1220

Rack travel in mm : 9.20...11.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 148.0...150.0

1000 : (145.0...153.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 296...304

Testing:
1st rack travel in: 9.50
Speed rpm : 1125...1135
2nd rack travel in: 4.00
Speed rpm : 1210...1240
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 243...251

Testing:
Speed rpm : 200
Minimum rack travel: 6.80
Speed rpm : 275
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 340...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 10.50...10.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.20
2nd pressure hPa : 240
Rack travel in m: 10.10...10.20
3rd pressure hPa : 130
Rack travel in m: 9.40...9.60

START CUT-OUT

Speed 1/min : 210 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1050

Del.quantity cm³/ : 144.0...150.0
1000 s: (141.0...153.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 101.0...103.0
1000 s: (98.0...106.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.50
Speed rpm : 1125...1135

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...190.0
1000 s: (156.0...194.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.20...5.60
Del.quantity cm³/ : 22.0...26.0
1000 s: (19.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 9,8 s
 Edition : 24.07.92
 Replaces : 10.91
 Test oil : ISO-4113
 Combination no. : 0 402 046 830
 Injection pump
 Pump designation : PES6P120A320RS3290
 EP type number : 0 412 026 751
 Governor
 Governor design. : RQ275/950PA99-4
 Governor no. : 0 421 801 612

Customer-spec. information
 Customer : RVI

Engine : MIDR/PRO62045

1st version kW : 151.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)
 Rack travel in mm : 18.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 13.9...14.1

100 s: (13.6...14.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.2

Del.quantity cm³/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm³ : 0.8

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 1000

Del.quantity : 139.0...141.0

1000 : (136.0...144.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1010...1025

2nd rack travel in: 4.00

Speed rpm : 1095...1125
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:

Speed rpm : 200
Minimum rack travel: 6.05
Speed rpm : 250
Rack travel in mm : 1.95...5.15
Rack travel in mm : 2.00
Speed rpm : 315...355

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 500
Rack travel in m: 13.20...13.30
2nd speed rpm : 950
Rack travel in m: 13.10...13.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 10.95...10.90
2nd pressure hPa : 160
Rack travel in m: 11.20...11.30
3rd pressure hPa : 320
Rack travel in m: 12.10...12.40

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 950
Del. quantity cm³/ : 153.0...159.0
1000 s: (150.0...162.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 99.0...101.0
1000 s: (96.0...104.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1010...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 140.0...170.0
1000 s: (136.0...174.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.20
Del. quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (8.00)

Remarks:

:
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 19.11.93
 Replaces : 06.93
 Test oil : ISO-4113
 Combination no. : 0 402 046 839
 Injection pump
 Pump designation : PES6P100A320LS3306
 EP type number : 0 412 006 703
 Governor
 Governor design. : RQV350...1200PA1042
 -1K
 Governor no. : 0 421 815 322

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kw : 172.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 076

Inlet press., bar : 2.80

Overflow
 quantity min. 1/h: 240...260

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 14.00...17.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 14.20...14.30

Del.quantity cm³/ : 16.3...16.5

100 s: (16.1...16.7)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm³/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm³ : 0.4

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 500
 travel mm : 3.50...3.90

3rd speed rpm : 800
 travel mm : 6.20...6.60

4th speed rpm : 1250
 travel mm : 9.30...9.50

5th speed rpm : 1400
 travel mm : 10.50...11.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 1200
Del.quantity : 163.0...165.0
1000 : (161.0...167.0)
Spread cm3 : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.50
Speed rpm : 1260...1290
2nd rack travel in: 4.00
Speed rpm : 1445...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 74...82

Testing:
Speed rpm : 275
Minimum rack trave: 7.70
Speed rpm : 350
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION
Speed rpm : 350...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 14.20...14.30
2nd speed rpm : 1200
Rack travel in m: 14.50...14.70
3rd speed rpm : 650
Rack travel in m: 13.30...13.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 14.50...14.70

Measurement
Speed 1/min : 1200

1st pressure hPa : -

L01

Rack travel in m: 10.30...10.70
2nd pressure hPa : 310
Rack travel in m: 11.20...11.30
3rd pressure hPa : 655
Rack travel in m: 13.00...13.40

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm3/ : 168.0...172.0
1000 s: (166.0...174.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 800
Del.quantity cm3/ : 70.5...74.5
1000 s: (68.5...76.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1260...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...160.0
1000 s: (115.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 15.5...19.5
1000 s: (13.0...22.0)
Spread cm3 : 4.00
1000 s: (6.50)

Remarks: : NAVISTAR #1819914C91

Bow dimension:
Sliding-sleeve position = 37.0 mm
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Delivery-valve spring pre-tension =
6.30...6.40 mm.
Permissible alteration from 6.00...6.70
mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : NAV
 Edition : 09.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 843
 Injection pump
 Pump designation : PES6P100A320LS3306
 EP type number : 0 412 006 703
 Governor
 Governor design. : RQV350...1200PA1042
 -2K
 Governor no. : 0 421 815 326

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kw : 156.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 076

Inlet press., bar : 2.80

Overflow
 quantity min. 1/h: 240...260

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 14.00...17.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 15.2...15.4

100 s: (15.0...15.6)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.4

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 500
 travel mm : 3.50...3.90

3rd speed rpm : 800
 travel mm : 6.20...6.60

4th speed rpm : 1250
 travel mm : 9.30...9.50

5th speed rpm : 1400
 travel mm : 10.50...11.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 1200
Del.quantity : 152.0...154.0
1000 : (150.0...156.0)
Spread cm3 : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 12.90
Speed rpm : 1260...1290
2nd rack travel in: 4.00
Speed rpm : 1440...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 71...79

Testing:
Speed rpm : 275
Minimum rack travel: 7.70
Speed rpm : 350
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 350...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 13.60...13.70
2nd speed rpm : 1200
Rack travel in m: 13.90...14.10
3rd speed rpm : 600
Rack travel in m: 12.80...13.20

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 1200

1st pressure hPa : -

L04

Rack travel in m: 9.80...10.20
2nd pressure hPa : 255
Rack travel in m: 11.40...11.50
3rd pressure hPa : 550
Rack travel in m: 13.00...13.40

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm3/ : 157.5...161.5
1000 s: (155.5...163.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 800
Del.quantity cm3/ : 68.5...72.5
1000 s: (66.5...74.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 1260...1290

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...160.0
1000 s: (115.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm3 : 4.00
1000 s: (6.50)

Remarks:

: NAVISTAR #1819919C91

Bow dimension:
Sliding-sleeve position = 37.0 mm
Delivery-valve spring pre-tension =
6.30...6.40 mm.
Permissible alteration from 6.00...6.70
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : NAV
 Edition : 09.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 844
 Injection pump
 Pump designation : PES6P100A320LS3306
 EP type number : 0 412 006 703
 Governor
 Governor design. : RQV350...1200PA1042
 -3K
 Governor no. : 0 421 815 327

Customer spec. information
 Customer : NAVISTAR

Engine : DTA-466

1st version kW : 145.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 076

Inlet press., bar : 2.80

Overflow
 quantity min. 1/h: 240...260

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 14.00...17.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 13.4...13.6

100 s: (13.2...13.8)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del. quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.4

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00

2nd speed rpm : 500
 travel mm : 3.50...3.90

3rd speed rpm : 800
 travel mm : 6.20...6.60

4th speed rpm : 1250
 travel mm : 9.30...9.50

5th speed rpm : 1400
 travel mm : 10.50...11.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1440

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 800
Aneroid pressure h: 1200
Del.quantity : 134.0...136.0
1000 : (132.0...138.0)
Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 12.70
Speed rpm : 1240...1270
2nd rack travel in: 4.00
Speed rpm : 1420...1430
4th rack travel in: 1553
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 71...79

Testing:
Speed rpm : 275
Minimum rack trave: 7.50
Speed rpm : 350
Rack travel in mm : 5.80...6.00

CONSTANT REGULATION
Speed rpm : 350...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 800
Rack travel in m: 12.70...12.80
2nd speed rpm : 1200
Rack travel in m: 13.40...13.60
3rd speed rpm : 650
Rack travel in m: 12.10...12.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1200
Pressure hPa : 1200
Rack travel mm : 13.40...13.60

Measurement
Speed 1/min : 1200

1st pressure hPa : -

L07

Rack travel in m: 9.80...10.20
2nd pressure hPa : 270
Rack travel in m: 11.00...11.10
3rd pressure hPa : 560
Rack travel in m: 12.50...12.90

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1200
Del.quantity cm³/ : 150.0...154.0
1000 s: (148.0...156.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 1200
Del.quantity cm³/ : 73.5...77.5
1000 s: (71.5...79.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.70
Speed rpm : 1240...1260

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...160.0
1000 s: (115.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.80...6.00
Del.quantity cm³/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm³ : 4.00
1000 s: (6.50)

Remarks:

: NAVISTAR #1819919C91

Bow dimension:
Sliding-sleeve position = 37.0 mm
Delivery-valve spring pre-tension =
6.30...6.40 mm.
Permissible alteration from 6.00...6.70
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC
 Edition : 19.11.93
 Replaces : 06.93
 Test oil : ISO-4113

Combination no. : 0 402 046 845

Injection pump
 Pump designation : PES6P100A320LS3309
 EP type number : 0 412 006 704
 Governor
 Governor design. : RQV350...1300PA1042-6K
 Governor no. : 0 421 815 330

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-408

1st version kW : 142.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 058

Inlet press., bar : 2.80

Overflow
 quantity min. 1/h: 240...260

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 14.00...17.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.10...12.20

Del. quantity cm³/ : 13.2...13.4
 100 s: (13.0...13.6)

Spread cm³ : 0.8
 100 s: (1.2)

2nd speed rpm : 350.0
 Rack travel in mm : 5.1...5.3
 Del. quantity cm³/ : 1.4...1.8
 100 s: (1.2...2.1)
 Spread cm³ : 0.4
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.60...2.00
 2nd speed rpm : 500
 travel mm : 3.80...4.20
 3rd speed rpm : 800
 travel mm : 5.80...6.20
 4th speed rpm : 1300
 travel mm : 8.90...9.10
 5th speed rpm : 1500
 travel mm : 10.40...10.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1500
 Rack travel in mm : 8.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 132.5...134.5
1000 : (130.5...136.5)
Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.40
Speed rpm : 1390...1420
2nd rack travel in: 4.00
Speed rpm : 1530...1540
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 71...79

Testing:
Speed rpm : 275
Minimum rack travel: 6.70
Speed rpm : 350
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 350...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.10...12.20
2nd speed rpm : 1300
Rack travel in m: 12.40...12.60
3rd speed rpm : 700
Rack travel in m: 11.40...11.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1300
Pressure hPa : 1200
Rack travel mm : 12.40...12.60

Measurement
Speed 1/min : 1300

1st pressure hPa : -

L10

Rack travel in m: 8.40...8.80
2nd pressure hPa : 270
Rack travel in m: 9.60...9.70
3rd pressure hPa : 570
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 139.0...143.0
1000 s: (137.0...145.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 900
Del.quantity cm³/ : 66.0...70.0
1000 s: (64.0...72.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.40
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...160.0
1000 s: (115.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del.quantity cm³/ : 14.5...18.5
1000 s: (12.0...21.0)
Spread cm³ : 4.00
1000 s: (6.50)

Remarks:

: NAVISTAR #1819922C91

Bow dimension:
Sliding-sleeve position = 37.0 mm
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Delivery-valve spring pre-tension =
6.30...6.40 mm.
Permissible alteration from 6.00...6.70
mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : NAV
 Edition : 14.10.93
 Replaces : 08.93
 Test oil : ISO-4113

Combination no. : 0 402 046 846

Injection pump
 Pump designation : PES6P100A320LS3309
 EP type number : 0 412 006 704
 Governor
 Governor design. : RGV350...1300PA1042
 -7K
 Governor no. : 0 421 815 331

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-408

1st version kW : 130.5
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 058

Inlet press., bar : 2.80

Overflow
 quantity min. l/h: 240...260

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05
 : (2.90...3.10)

Rack travel in mm : 14.00...17.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 10.0...10.2
 100 s: (9.8...10.4)

Spread cm³ : 0.8
 100 s: (1.2)

2nd speed rpm : 350.0
 Rack travel in mm : 5.1...5.3
 Del.quantity cm³/ : 1.4...1.8
 100 s: (1.2...2.1)

Spread cm³ : 0.4
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.60...2.00

2nd speed rpm : 500
 travel mm : 3.80...4.20

3rd speed rpm : 800
 travel mm : 5.80...6.20

4th speed rpm : 1300
 travel mm : 8.90...9.10

5th speed rpm : 1500
 travel mm : 10.40...10.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1500
 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 100.0...102.0
1000 : (98.0...104.0)
Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 10.70
Speed rpm : 1360...1390
2nd rack travel in: 4.00
Speed rpm : 1500...1510
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 71...79

Testing:
Speed rpm : 275
Minimum rack trave: 6.20
Speed rpm : 350
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 350...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 11.00...11.10
2nd speed rpm : 1300
Rack travel in m: 11.70...11.90
3rd speed rpm : 700
Rack travel in m: 10.30...10.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1300
Pressure hPa : 1200
Rack travel mm : 11.70...11.90

Measurement
Speed 1/min : 1300

1st pressure hPa : -

Rack travel in m: 8.80...9.20
2nd pressure hPa : 270
Rack travel in m: 9.80...9.90
3rd pressure hPa : 580
Rack travel in m: 11.10...11.50

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1300
Del.quantity cm³/ : 122.0...126.0
1000 s: (120.0...128.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 900
Del.quantity cm³/ : 69.0...73.0
1000 s: (67.0...75.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.70
Speed rpm : 1360...1390

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...160.0
1000 s: (115.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del.quantity cm³/ : 14.5...18.5
1000 s: (12.0...21.0)
Spread cm³ : 4.00
1000 s: (6.50)

Remarks:

: NAVISTAR #1819923C91

Bow dimension:
Sliding-sleeve position = 37.0 mm
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Delivery-valve spring pre-tension =
6.30...6.40 mm.
Permissible alteration from 6.00...6.70
mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN
 Edition : 07.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 849
 Injection pump
 Pump designation : PES6P120A720LS3229-1
 EP type number : 0 412 026 762
 Governor
 Governor design. : RQV300...900PA1071
 Governor no. : 0 421 814 056

Customer-spec. information
 Customer : MAN

Engine : D 2866 TE

1st version kW : 191.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90
 : (3.75...3.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 17.5...17.7

100 s: (17.2...18.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.3...4.7

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.12...1.32

2nd speed rpm : 410

travel mm : 2.36...2.76

3rd speed rpm : 653

travel mm : 4.51...4.91

4th speed rpm : 959

travel mm : 8.24...8.54

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1045

Rack travel in mm : 6.90...9.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 175.0...177.0

1000 : (172.0...180.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 49...57

Testing:

1st rack travel in: 8.25
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 995...1025
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 200
Minimum rack travel: 6.90
Speed rpm : 300
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 300...400

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del. quantity cm³/ : 182.0...188.0
1000 s: (179.0...191.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.25
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

: MAN-NR. 3-7011/3

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 09.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 850
 Injection pump
 Pump designation : PES6P120A320RS3320
 EP type number : 0 412 026 763
 Governor
 Governor design. : RQV275...1000PA995-2
 Governor no. : 0 421 815 940

Customer-spec. information
 Customer : RVI

Engine : MIDR 063540 M/3

1st version kW : 236.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45
 : (3.30...3.50)
 Rack travel in mm : 18.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 12.40...12.50

Del.quantity cm³/ : 23.9...24.1

100 s: (23.6...24.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.75...4.95

Del.quantity cm³/ : 2.3...2.7

100 s: (2.0...3.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.56...1.76

2nd speed rpm : 343

travel mm : 2.13...2.53

3rd speed rpm : 393

travel mm : 2.79...3.19

4th speed rpm : 490

travel mm : 3.61...4.01

5th speed rpm : 1086

travel mm : 8.36...8.56

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1180

Rack travel in mm : 10.10...12.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 239.0...241.0
1000 : (236.0...244.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 299...307

Testing:

1st rack travel in: 11.45
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 245...253

Testing:

Speed rpm : 200
Minimum rack travel: 6.95
Speed rpm : 300
Rack travel in mm : 4.85...5.05

CONSTANT REGULATION

Speed rpm : 285...395

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.40...12.50

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.75...9.95
2nd pressure hPa : 280
Rack travel in m: 11.55...11.65
3rd pressure hPa : 160
Rack travel in m: 10.55...10.75

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

L18

Aneroid pressure h: 1000
Speed rpm : 1000
Del.quantity cm³/ : 227.0...233.0
1000 s: (224.0...236.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.45
Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 23.0...27.0
1000 s: (20.0...30.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI
 Edition : 09.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 851
 Injection pump
 Pump designation : PES6P120A32ORS3290-1
 EP type number : 0 412 026 765
 Governor
 Governor design. : RQ300/1050PA999-5
 Governor no. : 0 421 801 663

Customer-spec. information

Customer : RVI
 Engine : MIHR 062045 B3
 1st version kW : 152.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30
 : (4.15...4.35)
 Rack travel in mm : 18.00...21.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.75...12.85
 Del. quantity cm³/ : 15.3...15.5
 100 s: (115.0...15.8)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 4.7...5.1
 Del. quantity cm³/ : 1.9...2.3
 100 s: (1.6...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 700
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1000
 Del. quantity : 153.0...155.0
 1000 : (150.0...158.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 11.80

Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1235...1265
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.90

Testing:

Speed rpm : 200
Minimum rack travel: 6.00
Speed rpm : 275
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 440...480

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 12.75...12.85

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.80...12.00
2nd pressure hPa : 120
Rack travel in m: 12.10...12.20
3rd pressure hPa : 180
Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 1050
Del.quantity cm³/ : 148.0...154.0
1000 s: (145.0...157.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 121.0...123.0
1000 s: (118.0...126.0)

BREAKAWAY

1st version

L20

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...160.0
1000 s: (136.0...174.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 19.0...23.0
1000 s: (67.0...26.0)
Spread cm³ : 8.00
1000 s: (12.0)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : NAV
 Edition : 14.10.93
 Replaces : 08.93
 Test oil : ISO-4113

 Combination no. : 0 402 046 852

 Injection pump
 Pump designation : PES6P100A320LS3323
 EP type number : 0 412 006 708
 Governor
 Governor design. : RQV350...1300PA1087
 Governor no. : 0 421 814 064

Customer-spec. information
 Customer : NAVISTAR

Engine : DTA-408

1st version kW : 112.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 058

Inlet press., bar : 2.80

Overflow
 quantity min. 1/h: 240...260

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 14.00...17.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.30...14.40

Del. quantity cm³/ : 13.1...13.3

100 s: (12.9...13.5)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.4

Del. quantity cm³/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm³ : 0.4

100 s: (0.6)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1200

Del. quantity : 131.0...133.0

1000 : (129.0...135.0)

Spread cm³ : 8.00

1000 : (12.00)

RATED SPEED

1st version

Control lever
 position degrees: 114...126

Testing:

1st rack travel in: 13.30

Speed rpm : 1375...1405

2nd rack travel in: 4.00

Speed rpm : 1555...1565

4th rack travel in: 1650

Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 66...78

Testing:
Speed rpm : 275
Minimum rack trave: 8.00
Speed rpm : 350
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION
Speed rpm : 350...520

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 800
Pressure hPa : 1300
Rack travel mm : 14.30...14.40

Measurement
Speed 1/min : 800

1st pressure hPa : -
Rack travel in m: 9.80...10.20
2nd pressure hPa : 285
Rack travel in m: 11.10...11.20
3rd pressure hPa : 660
Rack travel in m: 13.10...13.50

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 800
Del.quantity cm3/ : 65.0...69.0
1000 s: (63.0...71.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1375...1405

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...160.0
1000 s: (115.0...165.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 14.5...18.5
1000 s: (12.0...21.0)
Spread cm3 : 4.00
1000 s: (6.50)

Remarks:
: NAVISTAR #1821958C91

Bow dimension:
Sliding-sleeve position = 37.0 mm
Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

Delivery-valve spring pre-tension =
6.30...6.40 mm.
Permissible alteration from 6.00...6.70
mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RAB
 Edition : 13.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 046 853
 Injection pump
 Pump designation : PE6P120A32ORS3321
 EP type number : 0 412 026 766
 Governor
 Governor design. : RQ275...950PA1085
 Governor no. : 0 421 801 691

Customer-spec. information
 Customer : RABA

Engine : D10-UTS184

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 13.30...13.40
 Del.quantity cm3/ : 19.6...19.8
 100 s: (19.3...20.1)
 Spread cm3 : 0.5
 100 s: (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 8.10...8.30
 Del.quantity cm3/ : 1.9...2.5
 100 s: (2.0...3.0)
 Spread cm3 : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 500
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 900
 Del.quantity : 196.0...198.0
 1000 : (193.0...201.0)
 Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 500
 Rack travel in mm : 20.5

Testing:
 1st rack travel in: 12.35
 Speed rpm : 1007...1017
 2nd rack travel in: 4.00
 Speed rpm : 1080...2010

4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.00

Testing:

Speed rpm : 175
Minimum rack trave: 7.40
Speed rpm : 275
Rack travel in mm : 4.70...5.30

CONSTANT REGULATION

Speed rpm : 200...350

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.10...11.50
2nd pressure hPa : 450
Rack travel in m: 12.75...12.85
3rd pressure hPa : 350
Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 191.0...197.0
1000 s: (188.0...200.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 114.0...118.0
1000 s: (112.0...120.0)

BRKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.35
Speed rpm : 1007...1017

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 134.0...174.0
1000 s: (130.0...178.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
 Edition : 13.12.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 076 060

Injection pump
 Pump designation : PES6P110A320RS534
 EP type number : 0 412 016 077
 Governor
 Governor design. : RSV450...1050P1A572
 Governor no. : 0 421 833 428

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8365.25.533

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 10.10...10.20

Del.quantity cm³/ : 10.7...10.8

100 s: (10.4...11.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 450.0

Rack travel in mm : 4.8...5.2

Del.quantity cm³/ : 1.5...2.1

100 s: (1.2...2.4)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 900
 Del.quantity : 107.0...109.0

1000 : (104.0...112.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 104...112

Testing:
 1st rack travel in: 9.00
 Speed rpm : 1090...1100
 2nd rack travel in: 4.00

Speed rpm : 1115...1145
3rd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 76...84
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.5
Speed rpm : 450
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 530...590

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 10.00...10.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.20...9.40
2nd pressure hPa : 450
Rack travel in m: 9.86...9.96

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 550
Del.quantity cm³/ : 120.0...124.0
1000 s: (117.0...127.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 103.0...105.0
1000 s: (100.0...108.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 185.0...215.0
1000 s: (181.0...219.0)

Remarks:

: NAVISTAR #1820269C91

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO
 Edition : 13.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 630 812
 Injection pump
 Pump designation : PE12P120A120LS7306
 EP type number : 0 412 620 839
 Governor
 Governor design. : RQV325...1500PA930
 Governor no. : 0 421 813 804

Customer-spec. information
 Customer : BAUDOUIN

Engine : 12 F 120 SRE
 1st version kW : 618.0
 Rated speed : 3000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 12- 9- 5- 3- 8-
 : 11- 4- 2- 10- 7- 6-

Phasing : 0-45-60-105-120-165-
 : 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1500
 Rack travel in mm : 12.70...12.80
 Del. quantity cm³/ : 18.6...18.8
 100 s: (18.3...19.1)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 500
 Rack travel in mm : 10.65...10.85
 Del. quantity cm³/ : 12.7...13.1
 100 s: (12.4...13.4)
 3rd speed rpm : 325
 Rack travel in mm : 6.80...7.20
 Del. quantity cm³/ : 2.5...3.5 *
 100 s: (-)
 Spread cm³ : -
 100 s: (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.04...1.24
 2nd speed rpm : 381
 travel mm : 1.68...2.08
 3rd speed rpm : 431
 travel mm : 2.12...2.52
 4th speed rpm : 899
 travel mm : 3.68...4.08
 5th speed rpm : 1555
 travel mm : 8.50...8.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1700
 Rack travel in mm : 5.00...8.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500
Aneroid pressure h: 900
Del.quantity : 186.0...188.0
1000 : (183.0...191.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 119...127

Testing:

1st rack travel in: 11.70
Speed rpm : 1540...1550
2nd rack travel in: 4.00
Speed rpm : 1655...1685
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 84...92

Testing:

Speed rpm : 200
Minimum rack travel: 8.50
Speed rpm : 325
Rack travel in mm : 6.90...7.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.65...10.85
2nd pressure hPa : 400
Rack travel in m: 12.20...12.30
3rd pressure hPa : 360
Rack travel in m: 11.75...11.95

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

L28

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 127.0...131.0
1000 s: (124.0...134.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1540...1550

HIGH IDLE

1st version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm3/ : 0 **
1000 s: (-)

2nd version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 8.00
Del.quantity cm3/ : < 50.0 **
1000 s: (-)

3rd version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : 8.50...8.70
Del.quantity cm3/ : 60.0...
1000 s: (-)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.80...7.20
Del.quantity cm3/ : 25.0...35.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7153

* applies to cylinders 4, 5, 6, 8, 10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
 Edition : 13.12.93
 Replaces : 21.09.92
 Test oil : ISO-4113
 Combination no. : 0 402 638 807
 Injection pump
 Pump designation : PE8P120A120LS7127
 EP type number : 0 412 628 817
 Governor
 Governor design. : RQ300/1100PA134-3
 Governor no. : 0 421 801 655

Customer-spec. information
 Customer : SNF

Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter x Wall thickness x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 4- 8- 6- 3-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 500
 Rack travel in mm : 13.80...13.90
 Del.quantity cm³/ : 14.2...14.4
 100 s: (13.9...14.7)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.4...7.0
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 500
 Aneroid pressure h: 1200
 Del.quantity : 142.0...144.0
 1000 : (139.0...147.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 16.0
 Testing:
 1st rack travel in: 12.80
 Speed rpm : 1145...1161
 2nd rack travel in: 4.00

Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:

Speed rpm : 200
Minimum rack travel: 8.20
Speed rpm : 300
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 400...440

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 790
Rack travel in m: 12.80...12.90
3rd pressure hPa : 490
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1100
Del.quantity cm³/ : 205.0...207.0
1000 s: (202.0...210.0)
Spread cm³ : 12.00
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...210.0
1000 s: (176.0...214.0)
Rack travel in mm : 15.00...16.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE
 Edition : 14.12.93
 Replaces : 21.09.92
 Test oil : ISO-4113
 Combination no. : 0 402 638 808
 Injection pump
 Pump designation : PE8P120A120LS7127
 EP type number : 0 412 628 817
 Governor
 Governor design. : RQV250...1100PA785-3
 Governor no. : 0 421 814 004

Customer-spec. information
 Customer : SNF

Engine : WD 815.72/73

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.10...5.20
 : (5.05...5.25)
 Rack travel in mm : 8.00...9.00

M03

Firing order : 1- 5- 4- 8- 6- 3-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 500
 Rack travel in mm : 13.80...13.90
 Del.quantity cm³/ : 14.2...14.4
 100 s : (13.9...14.7)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 6.7...7.1
 Del.quantity cm³/ : 1.4...2.0
 100 s : (1.1...2.3)
 Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.95...1.35
 2nd speed rpm : 355
 travel mm : 1.70...2.20
 3rd speed rpm : 410
 travel mm : 2.20...2.70
 4th speed rpm : 1150
 travel mm : 8.35...8.65
 5th speed rpm : 1390
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1220
 Rack travel in mm : 11.50...14.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 500
 Aneroid pressure h: 1200
 Del.quantity : 142.0...144.0
 1000 : (139.0...147.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 103...111

Testing:
1st rack travel in: 12.80
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 70...78

Testing:
Speed rpm : 150
Minimum rack travel: 8.80
Speed rpm : 250
Rack travel in mm : 6.80...7.00

CONSTANT REGULATION
Speed rpm : 350...420

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 13.80...13.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.40
2nd pressure hPa : 790
Rack travel in m: 12.80...12.90
3rd pressure hPa : 520
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 1100

Del.quantity cm³/ : 205.0...207.0
1000 s: (202.0...210.0)
Spread cm³ : 12.00
1000 s: (15.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...210.0
1000 s: (176.0...214.0)
Rack travel in mm : 15.00...16.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 b3
 Edition : 14.12.93
 Replaces : 18.12.92
 Test oil : ISO-4113
 Combination no. : 0 402 640 830
 Injection pump
 Pump designation : PE12P120A520LS7824-2
 EP type number : 0 412 620 828
 Governor
 Governor design. : RQV300...1150PA902-4
 Governor no. : 0 421 813 870

Customer-spec. information
 Customer : MAN

Engine : D2842LYE

1st version kW : 735.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 13.70...13.80
 Del.quantity cm³/ : 30.4...30.6
 100 s : (30.1...30.9)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 500
 Rack travel in mm : 9.1...9.3
 Del.quantity cm³/ : 14.9...15.1
 100 s : (14.6...15.4)
 Spread cm³ : 0.8
 100 s : (1.2)
 3rd speed rpm : 300
 Rack travel in mm : 7.20...7.40
 Del.quantity cm³/ : 5.2...6.0 *
 100 s : (-)
 Spread cm³ : -
 100 s : (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.60
 2nd speed rpm : 450
 travel mm : 2.90...3.50
 3rd speed rpm : 750
 travel mm : 5.60...6.00
 4th speed rpm : 1150
 travel mm : 9.50...9.70
 5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1270
Rack travel in mm : 11.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 304.0...306.0
1000 : (301.0...309.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 79...87

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 300
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 470...530

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 100
Rack travel in m: 9.40...9.50
3rd pressure hPa : 470
Rack travel in m: 12.20...12.60

START CUT-OUT

M06

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.70
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm³/ : - **
1000 s: (-)

2nd version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : < 50.0
1000 s: (-)

3rd version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : 8.40...8.60
Del.quantity cm³/ : 125.0...200.0
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.20...7.40
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7153

* applies to cylinders 4, 5, 6, 8, 10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 14.12.93
 Replaces : 16.08.93
 Test oil : ISO-4113

Combination no. : 0 402 646 600

Injection pump
 Pump designation : PE6P120A720RS7022
 EP type number : 0 412 626 873
 Governor
 Governor design. : RQV200...1000PA539
 -14
 Governor no. : 0 421 814 011

Customer-spec. information
 Customer : SCANIA

Engine : DS11 76

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 2.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 16.8...17.0

100 s: (16.5...17.3)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm : 4.6...5.0

Del. quantity cm³/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm³ : 0.4

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60

2nd speed rpm : 350
 travel mm : 2.40...3.00

3rd speed rpm : 650
 travel mm : 4.50...5.10

4th speed rpm : 1045
 travel mm : 8.40...8.60

5th speed rpm : 1150
 travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1050
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
 Aneroid pressure h: 1500
 Del. quantity : 168.0...170.0
 1000 : (165.0...173.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 9.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 150
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 390...450

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 10.90...11.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.30
2nd pressure hPa : 390
Rack travel in m: 10.60...10.70
3rd pressure hPa : 340
Rack travel in m: 10.15...10.45

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1000
Del. quantity cm³/ : 166.0...174.0
1000 s: (164.0...176.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 140.0...180.0
1000 s: (136.0...184.0)
Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 14.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 602
 Injection pump
 Pump designation : PE6P120A720RS7264
 EP type number : 0 412 626 874
 Governor
 Governor design. : RQ750PA758-14
 Governor no. : 0 421 801 659

Customer-spec. information
 Customer : SCANIA

Engine : D 11

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 0008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del.quantity cm³/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 500.0

Rack travel in mm : 10.20...10.60

Del.quantity cm³/ : 16.5...16.7

100 s: (16.2...17.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 275.0...277.0

1000 : (272.0...280.0)

Spread cm³ : 8.00

1000 : (12.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 13.10

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 790...803

4th rack travel in: 850

Speed rpm : 0.00...1.00

Aneroid/Altitude
 Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 1500

Rack travel mm : 14.10...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.10...12.20

3rd pressure hPa : 270

Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 165.0...167.0

1000 s: (162.0...170.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 100.0...140.0

1000 s: (96.0...144.0)

Rack travel in mm : 10.20...10.60

HIGH IDLE

1st version

Rack travel in mm : 5.40...5.60

Del.quantity cm3/ : 26.0...34.0

1000 s: (24.0...36.0)

Spread cm3 : 5.00

1000 s: (9.00)

Remarks:

:

Start-of-delivery setting with ROBO diaphragm.

APPLICATION

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 14.12.93
 Replaces : 15.08.93
 Test oil : ISO-4113

Combination no. : 0 402 646 603

Injection pump
 Pump designation : PE6P120A720RS7022
 EP type number : 0 412 626 873
 Governor
 Governor design. : RQV200...1000PA539
 -15
 Governor no. : 0 421 814 013

Customer-spec. information
 Customer : SCANIA

Engine : DS11 75

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 2.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del.quantity cm³/ : 20.8...21.0

100 s: (20.5...21.3)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm : 4.4...5.0

Del.quantity cm³/ : 1.5...1.9

100 s: (1.2...2.2)

Spread cm³ : 0.4

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60

2nd speed rpm : 350
 travel mm : 2.40...3.00

3rd speed rpm : 650
 travel mm : 4.50...5.10

4th speed rpm : 1045
 travel mm : 8.40...8.60

5th speed rpm : 1150
 travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del.quantity : 208.0...210.0

1000 : (205.0...213.0)

Spread cm3 : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.10
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 150
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.10...12.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.30
2nd pressure hPa : 590
Rack travel in m: 11.60...11.70
3rd pressure hPa : 390
Rack travel in m: 10.45...10.75

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1000
Del. quantity cm3/ : 194.0...202.0
1000 s: (192.0...204.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm3/ : 143.0...145.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 140.0...180.0
1000 s: (136.0...184.0)
Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 14.12.93
 Replaces : 22.01.93
 Test oil : ISO-4113
 Combination no. : 0 402 646 604
 Injection pump
 Pump designation : PE6P120A720RS7188
 EP type number : 0 412 626 832
 Governor
 Governor design. : RQV350...1050PA795
 -13
 Governor no. : 0 421 814 017

Customer-spec. information
 Customer : SCANIA

Engine : DS11 Allivarv

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.40...4.50
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.30...13.40
 Del.quantity cm3/ : 23.5...23.7
 100 s: (23.2...24.0)
 Spread cm3 : 0.8
 100 s: (1.2)

2nd speed rpm : 350.0
 Rack travel in mm : 4.4...5.0
 Del.quantity cm3/ : 2.0...2.6
 100 s: (1.7...2.9)
 Spread cm3 : 0.4
 100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.20...1.60
 2nd speed rpm : 650
 travel mm : 4.10...4.70
 3rd speed rpm : 1095
 travel mm : 7.30...7.50
 4th speed rpm : 1240
 travel mm : 8.60...9.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1280
 Rack travel in mm : 11.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1500
 Del.quantity : 235.0...237.0
 1000 : (232.0...240.0)
 Spread cm3 : 8.00
 1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:
1st rack travel in: 12.30
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76

Testing:
Speed rpm : 250
Minimum rack travel: 8.00
Speed rpm : 350
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 375...435

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 13.30...13.40

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.60
2nd pressure hPa : 440
Rack travel in m: 12.00...12.10
3rd pressure hPa : 270
Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1050
Del. quantity cm³/ : 207.0...215.0
1000 s: (205.0...218.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 152.0...154.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.30
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 150.0...190.0
1000 s: (146.0...194.0)
Rack travel in mm : 13.30...13.40

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 14.12.93
 Replaces : 16.08.93
 Test oil : ISO-4113

Combination no. : 0 402 646 606

Injection pump
 Pump designation : PE6P120A72ORS71880
 EP type number : 0 412 626 846
 Governor
 Governor design. : RQV200...950PA725-10
 Governor no. : 0 421 814 002

Customer-spec. information
 Customer : SCANIA

Engine : D5C 11 32

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 2.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del. quantity cm³/ : 21.3...21.5

100 s: (21.0...21.8)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm : 4.4...5.0

Del. quantity cm³/ : 1.4...1.8

100 s: (1.0...2.2)

Spread cm³ : 0.4

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60

2nd speed rpm : 350
 travel mm : 2.40...3.00

3rd speed rpm : 650
 travel mm : 4.50...5.10

4th speed rpm : 1045
 travel mm : 8.40...8.60

5th speed rpm : 1125
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1150

Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1500
 Del. quantity : 213.0...215.0
 1000 : (210.0...218.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 11.50
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 150
Minimum rack travel: 6.20
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.50...12.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.60
2nd pressure hPa : 440
Rack travel in m: 12.00...12.10
3rd pressure hPa : 270
Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 950
Del. quantity cm³/ : 198.0...206.0
1000 s: (196.0...208.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 152.0...154.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 145.0...185.0
1000 s: (141.0...189.0)
Rack travel in mm : 10.20...10.60

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.60...4.80

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI
 Edition : 14.12.93
 Replaces : 18.12.92
 Test oil : ISO-4113

Combination no. : 0 402 646 607

Injection pump
 Pump designation : PE6P130A720RS7270
 EP type number : 0 412 636 821
 Governor
 Governor design. : RQV300...950PA946-4
 Governor no. : 0 421 814 026

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8210.42P.032

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 13.50...14.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 11.30...11.40

Del. quantity cm³/ : 21.1...21.3

100 s : (20.8...21.6)

Spread cm³ : 0.5

100 s : (0.8)

2nd speed rpm : 275.0

Rack travel in mm : 4.5...4.9

Del. quantity cm³/ : 1.9...2.5

100 s : (1.6...2.8)

Spread cm³ : 0.8

100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 8.40...8.60

2nd speed rpm : 300
 travel mm : 1.10...1.30

3rd speed rpm : 450
 travel mm : 2.80...3.40

4th speed rpm : 650
 travel mm : 4.40...5.00

5th speed rpm : 1200
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1060

Rack travel in mm : 9.00...11.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 1000

Del. quantity : 211.0...213.0

1000 : (208.0...216.0)

Spread cm3 : 5.00
1000 : (8.00)

RATED SPEED

1st version

Control lever
position degrees: 117...125

Testing:

1st rack travel in: 10.30
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1045...1075
3rd rack travel in: 4.00
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 73...81

Testing:

Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 275
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 275...400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 550
Pressure hPa : 1000
Rack travel mm : 11.30...11.40

Measurement

Speed 1/min : 550

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 300
Rack travel in m: 11.00...11.10
3rd pressure hPa : 260
Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 550
Del.quantity cm3/ : 213.0...219.0
1000 s: (210.0...222.0)
Aneroid pressure h: -

Speed rpm : 550
Del.quantity cm3/ : 184.0...186.0
1000 s: (181.0...189.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...165.0
1000 s: (131.0...169.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.50...4.90
Del.quantity cm3/ : 19.0...25.0
1000 s: (16.0...28.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 14.12.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 608

Injection pump
 Pump designation : PE6P120A72ORS7188J
 EP type number : 0 412 626 877
 Governor
 Governor design. : RQ200/950PA745-3
 Governor no. : 0 421 801 579

Customer-spec. information
 Customer : SCANIA

Engine : D5C 11 71

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.70...10.80

Del. quantity cm³/ : 15.6...15.8

100 s: (15.3...16.1)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 250.0

Rack travel in mm : 4.4...5.0

Del. quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.4

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1500

Del. quantity : 156.0...158.0

1000 : (153.0...161.0)

Spread cm³ : 8.00

1000 : (12.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.5

Testing:

1st rack travel in: 9.70

Speed rpm : 990...1000

2nd rack travel in: 4.00

Speed rpm : 1085...1115

4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.7

Testing:

Speed rpm : 150
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 320...360

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 950
Del.quantity cm³/ : 154.0...162.0
1000 s: (152.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...190.0
1000 s: (146.0...197.0)
Rack travel in mm : 10.70...10.80

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 14.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 611
 Injection pump
 Pump designation : PE6P120A720RS7188
 EP type number : 0 412 626 832
 Governor
 Governor design. : RGV200...950PA725-9
 Governor no. : 0 421 813 988

Customer-spec. information
 Customer : SCANIA

Engine : DSC 11 39

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.40...13.50
 Del. quantity cm³/ : 23.8...24.0
 100 s : (23.5...24.3)
 Spread cm³ : 0.8
 100 s : (1.2)
 2nd speed rpm : 250.0
 Rack travel in mm : 4.6...5.0
 Del. quantity cm³/ : 1.3...1.9
 100 s : (1.0...2.2)
 Spread cm³ : 0.4
 100 s : (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.40...1.80
 2nd speed rpm : 350
 travel mm : 2.30...2.90
 3rd speed rpm : 650
 travel mm : 5.20...5.80
 4th speed rpm : 995
 travel mm : 7.30...7.50
 5th speed rpm : 1180
 travel mm : 8.70...9.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1260
 Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
 Aneroid pressure h: 1500
 Del. quantity : 238.0...240.0
 1000 : (235.0...243.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 12.40
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 150
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.60
2nd pressure hPa : 440
Rack travel in m: 12.00...12.10
3rd pressure hPa : 270
Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 950
Del. quantity cm³/ : 220.0...228.0
1000 s: (218.0...230.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 151.0...155.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.40
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 150.0...190.0
1000 s: (146.0...194.0)
Rack travel in mm : 10.20...10.60

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 14.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 612
 Injection pump
 Pump designation : PE6P120A320RS7248
 -10X
 EP type number : 0 412 626 907
 Governor
 Governor design. : RQ275/1150PA987
 Governor no. : 0 421 801 578

Customer-spec. information
 Customer : DAF

Engine : RS 200 M
 1st version kW : 200.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 089
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

M24

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 11.2...12.2
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 11.70...11.80
 Del. quantity cm³/ : 17.1...17.3
 100 s: (16.8...17.6)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 5.2...5.6
 Del. quantity cm³/ : 1.3...1.9
 100 s: (1.0...2.2)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 550
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 1000
 Del. quantity : 171.0...173.0
 1000 : (168.0...176.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550
Rack travel in mm : 15.8

Testing:

1st rack travel in: 10.70
Speed rpm : 1185...1201
2nd rack travel in: 4.00
Speed rpm : 1255...1285
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.9

Testing:

Speed rpm : 175
Minimum rack travel: 7.00
Speed rpm : 275
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 320...360

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 340
Rack travel in m: 11.20...11.30
3rd pressure hPa : 200
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 120.5...122.5
1000 s: (117.5...125.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1185...1201

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 15.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 613
 Injection pump
 Pump designation : PE6P120A32ORS7248
 -10W
 EP type number : 0 412 626 908
 Governor
 Governor design. : RQ275/1150PA987
 Governor no. : 0 421 801 578

Customer-spec. information
 Customer : DAF

Engine : RS 180 M

1st version kW : 180.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 11.2...12.2
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.70...10.80

Del. quantity cm³/ : 15.3...15.5

100 s: (15.0...15.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.6

Del. quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del. quantity : 153.0...155.0

1000 : (150.0...158.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550
Rack travel in mm : 15.8

Testing:

1st rack travel in: 9.70
Speed rpm : 1185...1201
2nd rack travel in: 4.00
Speed rpm : 1250...1280
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 4.9

Testing:

Speed rpm : 175
Minimum rack travel: 7.00
Speed rpm : 275
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 320...360

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 300
Rack travel in m: 10.40...10.50
3rd pressure hPa : 240
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 121.5...123.5
1000 s: (118.5...126.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1185...1201

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 15.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 614
 Injection pump
 Pump designation : PE6P120A320RS7248
 -10W
 EP type number : 0 412 626 908
 Governor
 Governor design. : RQV275...1150PA986
 Governor no. : 0 421 813 920

Customer-spec. information
 Customer : DAF

Engine : RS 180 M
 1st version kW : 180.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 11.2...12.2
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.70...10.80

Del.quantity cm³/ : 15.3...15.5

100 s: (15.0...15.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.2...5.6

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.19...1.69

2nd speed rpm : 365

travel mm : 2.27...2.77

3rd speed rpm : 450

travel mm : 2.82...3.32

4th speed rpm : 799

travel mm : 4.96...5.46

5th speed rpm : 1206

travel mm : 7.99...8.49

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 8.40...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 153.0...155.0
1000 : (150.0...158.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 114...122

Testing:

1st rack travel in: 9.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1275...1305
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 175
Minimum rack trave: 7.40
Speed rpm : 275
Rack travel in mm : 4.80...5.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 300
Rack travel in m: 10.40...10.50
3rd pressure hPa : 240
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

ND1

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm³/ : 121.5...123.5
1000 s: (118.5...126.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1190...1200

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 14.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 615
 Injection pump
 Pump designation : PE6P120A320RS7248
 -10X
 EP type number : 0 412 626 907
 Governor
 Governor design. : RQV275...1150PA986
 Governor no. : 0 421 813 920

Customer-spec. information

Customer : DAF
 Engine : RS 200 M

1st version kW : 200.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

N02

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance : - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 11.2...12.2
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 11.70...11.80
 Del. quantity cm³/ : 17.1...17.3
 100 s: (16.8...17.6)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 275.0
 Rack travel in mm : 5.2...5.6
 Del. quantity cm³/ : 1.3...1.9
 100 s: (1.0...2.2)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 1.19...1.69
 2nd speed rpm : 365
 travel mm : 2.27...2.77
 3rd speed rpm : 450
 travel mm : 2.82...3.32
 4th speed rpm : 799
 travel mm : 4.96...5.46
 5th speed rpm : 1206
 travel mm : 7.99...8.49

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1335

Rack travel in mm : 9.00...11.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000
Aneroid pressure h: 1000
Del.quantity : 171.0...173.0
1000 : (168.0...176.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 115...123

Testing:

1st rack travel in: 10.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1450
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 78...86

Testing:

Speed rpm : 175
Minimum rack trave: 7.40
Speed rpm : 275
Rack travel in mm : 4.80...5.00

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 340

Rack travel in m: 11.20...11.30

3rd pressure hPa : 200

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

NO3

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm³/ : 120.5...122.5

1000 s: (117.5...125.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

Speed rpm : 1190...1200

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 15.12.93
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 619

Injection pump
 Pump designation : PE6P120A720RS71880
 EP type number : 0 412 626 846
 Governor
 Governor design. : RQV200...950PA725-11
 Governor no. : 0 421 814 033

Customer-spec. information
 Customer : SCANIA

Engine : D5C 11 35

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 2.50

Test nozzle holder
 assembly : 1 688 901 104

Opening
 pressure, bar : 250...253

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

NO4

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 21.9...22.1

100 s: (21.6...22.4)

Spread cm³ : 0.8

100 s: (1.2)

2nd speed rpm : 250.0
 Rack travel in mm : 4.4...5.0
 Del.quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)

Spread cm³ : 0.4
 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60

2nd speed rpm : 350
 travel mm : 2.40...3.00

3rd speed rpm : 650
 travel mm : 4.50...5.10

4th speed rpm : 1045
 travel mm : 8.40...8.60

5th speed rpm : 1125
 travel mm : 9.30...9.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1150
 Rack travel in mm : 7.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1500
 Del.quantity : 219.0...221.0
 1000 : (216.0...224.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 112...120

Testing:
1st rack travel in: 11.70
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1095...1125
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 60...68

Testing:
Speed rpm : 150
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 12.70...12.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.50
2nd pressure hPa : 375
Rack travel in m: 12.00...12.10
3rd pressure hPa : 185
Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 950
Del. quantity cm³/ : 202.0...210.0
1000 s: (200.0...212.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 114.0...116.0
1000 s: (111.0...119.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 110.0...140.0
1000 s: (106.0...144.0)
Rack travel in mm : 9.10...9.50

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 15.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 620
 Injection pump
 Pump designation : PE6P120A720RS7188
 EP type number : 0 412 626 832
 Governor
 Governor design. : RQV300...900PA795-17
 Governor no. : 0 421 814 058

Customer-spec. information
 Customer : SCANIA

Engine : D 11

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00

NO6

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.30...13.40
 Del.quantity cm³/ : 23.5...23.7
 100 s: (23.2...24.0)
 Spread cm³ : 0.8
 100 s: (1.2)
 2nd speed rpm : 300
 Rack travel in mm : 4.5...5.1
 Del.quantity cm³/ : 2.0...2.6
 100 s: (1.7...2.9)
 Spread cm³ : 0.4
 100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.40...1.80
 2nd speed rpm : 350
 travel mm : 1.90...2.50
 3rd speed rpm : 650
 travel mm : 4.70...5.30
 4th speed rpm : 950
 travel mm : 7.85...8.15
 5th speed rpm : 1045
 travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1280
 Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
 Aneroid pressure h: 1500
 Del.quantity : 235.0...237.0
 1000 : (232.0...240.0)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version

Control lever
position degrees: 101...109

Testing:

1st rack travel in: 12.30
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1020...1050
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 69...77

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 315...375

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.60
2nd pressure hPa : 440
Rack travel in m: 12.00...12.10
3rd pressure hPa : 270
Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 900
Del. quantity cm³/ : 218.0...226.0
1000 s: (214.0...230.0)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 152.0...154.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 140.0...180.0
1000 s: (-)
Rack travel in mm : 10.20...10.60

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 16.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : D 402 646 621
 Injection pump
 Pump designation : PE6P120A720RS7264
 EP type number : D 412 626 874
 Governor
 Governor design. : RQ900PA758-16
 Governor no. : D 421 801 685

Customer-spec. information
 Customer : SCANIA

Engine : D 11

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

N08

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 14.10...14.20
 Del. quantity cm³/ : 26.3...26.5
 100 s: (26.0...26.8)
 Spread cm³ : 0.8
 100 s: (1.2)
 2nd speed rpm : 500.0
 Rack travel in mm : 10.20...10.60
 Del. quantity cm³/ : 16.5...16.7
 100 s: (16.2...17.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1500
 Del. quantity : 263.0...265.0
 1000 : (260.0...268.0)
 Spread cm³ : 8.00
 1000 : (12.00)

RATED SPEED

1st version
 Testing:
 1st rack travel in: 13.10
 Speed rpm : 900...905
 2nd rack travel in: 4.00
 Speed rpm : 950...963
 4th rack travel in: 1000
 Speed rpm : 0.00...1.00

Aneroid/Altitude
 Compensator Test

1st version
 Setting
 Speed rpm : 500
 Pressure hPa : 1500
 Rack travel mm : 14.10...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : ..

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.00...12.10

3rd pressure hPa : 270

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 165.0...167.0

1000 s: (162.0...170.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10

Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 110.0...130.0

1000 s: (106.0...134.0)

Rack travel in mm : 10.20...10.60

HIGH IDLE

1st version

Rack travel in mm : 5.40...5.60

Del.quantity cm3/ : 26.0...34.0

1000 s: (24.0...36.0)

Spread cm3 : 5.00

1000 s: (9.00)

Remarks:

:

Start-of-delivery setting with ROBO diaphragm.

APPLICATION

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 16.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 622
 Injection pump
 Pump designation : PE6P120A72ORS7264
 EP type number : 0 412 626 874
 Governor
 Governor design. : RQ105GPA758-17
 Governor no. : 0 421 801 686

Customer-spec. information
 Customer : SCANIA

Engine : D 11

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

N10

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 14.10...14.20
 Del.quantity cm³/ : 26.3...26.5
 100 s: (26.0...26.8)
 Spread cm³ : 0.8
 100 s: (1.2)
 2nd speed rpm : 500.0
 Rack travel in mm : 10.20...10.60
 Del.quantity cm³/ : 16.5...16.7
 100 s: (16.2...17.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1500
 Del.quantity : 263.0...265.0
 1000 : (260.0...268.0)
 Spread cm³ : 8.00
 1000 : (12.00)

RATED SPEED

1st version
 Testing:
 1st rack travel in: 13.10
 Speed rpm : 1050...1055
 2nd rack travel in: 4.00
 Speed rpm : 1099...1112
 4th rack travel in: 1150
 Speed rpm : 0.00...1.00

Aneroid/Altitude
 Compensator Test

1st version
 Setting
 Speed rpm : 500
 Pressure hPa : 1500
 Rack travel mm : 14.10...14.20

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.20...10.60

2nd pressure hPa : 440

Rack travel in m: 12.10...12.20

3rd pressure hPa : 270

Rack travel in m: 10.85...11.15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : 165.0...167.0

1000 s: (162.0...170.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10

Speed rpm : 1050...1055

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 110.0...130.0

1000 s: (106.0...134.0)

Rack travel in mm : 10.20...10.60

HIGH IDLE

1st version

Rack travel in mm : 5.40...5.60

Del.quantity cm³/ : 26.0...34.0

1000 s: (24.0...36.0)

Spread cm³ : 5.00

1000 s: (9.00)

Remarks:

:

Start-of-delivery setting with ROBO diaphragm.

APPLICATION

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 15.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 624
 Injection pump
 Pump designation : PE6P120A320RS7299
 EP type number : 0 412 626 885
 Governor
 Governor design. : RQV275...1000FA1075K
 Governor no. : 0 421 815 356

Customer-spec. information
 Customer : DAF

Engine : WS 295 M

1st version kW : 295.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 95...115

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 14.70...14.80

Del.quantity cm³/ : 28.1...28.3

100 s: (27.8...28.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.4...5.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.89...2.39

2nd speed rpm : 334

travel mm : 2.92...3.42

3rd speed rpm : 390

travel mm : 3.54...4.04

4th speed rpm : 689

travel mm : 6.18...6.68

5th speed rpm : 1046

travel mm : 9.58...10.08

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1135

Rack travel in mm : 12.30...14.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 980
Aneroid pressure h: 1500
Del. quantity : 281.0...283.0
1000 : (278.0...286.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 13.40
Speed rpm : 1028...1038
2nd rack travel in: 4.00
Speed rpm : 1145...1175
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 73...81

Testing:

Speed rpm : 175
Minimum rack travel: 7.80
Speed rpm : 275
Rack travel in mm : 4.70...4.90

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 980
Rack travel in m: 14.70...14.80
2nd speed rpm : 750
Rack travel in m: 13.95...14.10
3rd speed rpm : 600
Rack travel in m: 13.00...13.20
4th speed rpm : 500
Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 14.30...14.40

Measurement

Speed 1/min : 980
1st pressure hPa : 840
Rack travel in m: 12.95...13.05
2nd pressure hPa : 430

Rack travel in m: 10.15...10.35
3rd pressure hPa : -
Rack travel in m: 8.90...9.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 750
Del. quantity cm³/ : 293.0...297.0
1000 s: (290.0...300.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm³/ : 171.0...173.0
1000 s: (168.0...176.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1028...1038

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF
 Edition : 15.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 626
 Injection pump
 Pump designation : PE6P120A320RS7299
 EP type number : 0 412 626 885
 Governor
 Governor design. : RQV275...1000PA1076K
 Governor no. : 0 421 815 357

Customer-spec. information
 Customer : DAF

Engine : WS 268 M

1st version kw : 268.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 95...115

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 24.9...25.1

100 s: (24.6...25.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.4...5.8

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 2.63...3.13

2nd speed rpm : 300
 travel mm : 2.87...3.37

3rd speed rpm : 370
 travel mm : 3.58...4.08

4th speed rpm : 680
 travel mm : 6.20...6.70

5th speed rpm : 1045
 travel mm : 9.67...10.17

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 11.30...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980
Aneroid pressure h: 1500
Del. quantity : 249.0...251.0
1000 : (246.0...254.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.55
Speed rpm : 1027...1037
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1275
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever
position degrees: 72...80

Testing:

Speed rpm : 175
Minimum rack travel: 7.50
Speed rpm : 275
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 365...425

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 980
Rack travel in m: 13.75...13.85
2nd speed rpm : 750
Rack travel in m: 13.00...13.10
3rd speed rpm : 825
Rack travel in m: 13.20...13.40
4th speed rpm : 600
Rack travel in m: 12.00...12.20
5th speed rpm : 500
Rack travel in m: 11.60...11.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 980
Pressure hPa : 1500
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 980

1st pressure hPa : 720
Rack travel in m: 12.20...12.30
2nd pressure hPa : 360
Rack travel in m: 9.75...9.85
3rd pressure hPa : -
Rack travel in m: 8.40...8.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 750
Del. quantity cm3/ : 261.0...265.0
1000 s: (258.0...268.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 600
Del. quantity cm3/ : 153.0...155.0
1000 s: (150.0...158.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.55
Speed rpm : 1027...1037

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 15.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 627
 Injection pump
 Pump designation : PE6P120A320RS7297
 EP type number : 0 412 626 884
 Governor
 Governor design. : RQV350...1100PA795
 -12
 Governor no. : 0 421 813 914
 Customer-spec. information
 Customer : SCANIA
 Engine : D5C 909

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.20...5.30
 : (5.15...5.35)

Rack travel in mm : 12.50...13.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.30 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.20...13.30
 Del. quantity cm³/ : 20.4...20.6
 100 s : (20.1...20.9)
 Spread cm³ : 0.8
 100 s : (1.2)

2nd speed rpm : 250.0
 Rack travel in mm : 4.6...5.2
 Del. quantity cm³/ : 2.3...2.9
 100 s : (2.0...3.2)
 Spread cm³ : 0.4
 100 s : (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.70
 2nd speed rpm : 650
 travel mm : 4.10...4.70
 3rd speed rpm : 1145
 travel mm : 7.80...8.00
 4th speed rpm : 1255
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1300
 Rack travel in mm : 10.70...13.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1500
 Del. quantity : 204.0...206.0
 1000 : (201.0...209.0)
 Spread cm³ : 8.00
 1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 102...110

Testing:
1st rack travel in: 12.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1255...1285
4th rack travel in: 14.00
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 70...78

Testing:
Speed rpm : 150
Minimum rack travel: 6.40
Speed rpm : 250
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 300...360

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 13.20...13.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.80...11.20
2nd pressure hPa : 670
Rack travel in m: 12.80...12.90
3rd pressure hPa : 470
Rack travel in m: 11.80...12.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1100
Del.quantity cm³/ : 179.0...187.0
1000 s: (177.0...189.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 169.0...171.0
1000 s: (166.0...174.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 245.0...285.0
1000 s: (241.0...289.0)
Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIA
 Edition : 15.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 628
 Injection pump
 Pump designation : PE6P120A32ORS7296
 EP type number : 0 412 626 888
 Governor
 Governor design. : RQV325...1000PA1058
 -1
 Governor no. : 0 421 814 060

Customer-spec. information
 Customer : LIAZ

Engine : M640F

1st version kW : 210.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 103

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.95...5.05
 : (4.90...5.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance - - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 15.30...15.40

Del.quantity cm3/ : 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 7.7...8.3

Del.quantity cm3/ : 2.2...2.8

100 s: (1.9...3.1)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.35...1.75

2nd speed rpm : 404

travel mm : 2.16...2.66

3rd speed rpm : 500

travel mm : 3.10...3.60

4th speed rpm : 764

travel mm : 5.52...6.02

5th speed rpm : 1057

travel mm : 8.43...8.93

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 11.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1500
Del.quantity : 188.0...190.0
1000 : (185.0...193.0)
Spread cm³ : 5.00
100% : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 14.30
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 65...73

Testing:

Speed rpm : 225
Minimum rack travel: 9.70
Speed rpm : 325
Rack travel in mm : 7.70...8.30

CONSTANT REGULATION

Speed rpm : 275...425

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 15.30...15.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.70...13.10
2nd pressure hPa : 710
Rack travel in m: 14.9...15.000
3rd pressure hPa : 340
Rack travel in m: 13.55...13.95

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 141.0...145.0
1000 s: (139.0...147.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.30
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 320.0...360.0
1000 s: (316.0...384.0)
Rack travel in mm : 20.00...21.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LIA
 Edition : 15.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 629
 Injection pump
 Pump designation : PE6P120A320RS7278
 EP type number : 0 412 626 880
 Governor
 Governor design. : RQV325...1000PA1058
 -2
 Governor no. : 0 421 814 061

Customer-spec. information
 Customer : LIAZ

Engine : M636S

1st version kw : 170.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 069

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X600

(A) Injection pump setting values
 Inisp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.95...5.05
 : (4.90...5.10)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 10.60...10.70

Del.quantity cm³/ : 20.3...20.5

100 s: (20.0...20.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 3.8...4.4

Del.quantity cm³/ : 1.9...2.5

100 s: (1.6...2.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.35...1.75

2nd speed rpm : 404
 travel mm : 2.16...2.66

3rd speed rpm : 500
 travel mm : 3.10...3.60

4th speed rpm : 764
 travel mm : 5.52...6.02

5th speed rpm : 1057
 travel mm : 8.43...8.93

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 8.40...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1500
Del.quantity : 203.0...205.0
1000 : (200.0...208.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 111...119

Testing:
1st rack travel in: 9.65
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 57...65

Testing:
Speed rpm : 225
Minimum rack travel: 5.70
Speed rpm : 325
Rack travel in mm : 3.80...4.40

CONSTANT REGULATION
Speed rpm : 275...425

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 10.60...10.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 590
Rack travel in m: 10.15...10.25
3rd pressure hPa : 365
Rack travel in m: 8.95...9.15

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 1000

Del.quantity cm³/ : 181.0...187.0
1000 s: (182.0...190.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 157.0...161.0
1000 s: (155.0...163.0)

BREAKAWAY

1st version:
1mm rack travel less than
full load rack tr: 9.65
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 305.0...345.0
1000 s: (301.0...349.0)

Remarks:

:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA
 Edition : 15.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 630
 Injection pump
 Pump designation : PE6P120A72ORS7302
 EP type number : 0 412 626 904
 Governor
 Governor design. : RQ200/950PA745-6
 Governor no. : 0 421 801 701

Customer-spec. information
 Customer : SCANIA

Engine : DS 11 78

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 104
 Opening
 pressure, bar : 250...253
 Orifice plate
 diameter mm : 0,7
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.30...13.40
 Del.quantity cm³/ : 17.0...17.2
 100 s: (16.7...17.5)
 Spread cm³ : 0.8
 100 s: (1.2)

2nd speed rpm : 250
 Rack travel in mm : 4.2...4.8
 Del.quantity cm³/ : 1.3...1.9
 100 s: (1.0...2.2)
 Spread cm³ : 0.4
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 1500
 Del.quantity : 170.0...172.0
 1000 : (167.0...175.0)
 Spread cm³ : 8.00
 1000 : (12.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 16.5

Testing:
 1st rack travel in: 12.30
 Speed rpm : 990...1000
 2nd rack travel in: 4.00
 Speed rpm : 1110...1140

4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 4.50

Testing:

Speed rpm : 150
Minimum rack travel: 6.00
Speed rpm : 250
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 315...355

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 1500
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in mm : 11.30...11.70
2nd pressure hPa : 400
Rack travel in mm : 13.00...13.10
3rd pressure hPa : 210
Rack travel in mm : 11.75...12.05

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500
Speed rpm : 950
Del. quantity cm³/ : 165.0...173.0
1000 s: (163.0...175.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 121.0...123.0
1000 s: (118.0...126.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack travel: 12.30
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 255.0...295.0
1000 s: (251.0...299.0)
Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 3.12.93
 Replaces : 06.92
 Test oil : ISO-4113

Combination no. : 0 402 646 915X

Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQ300/1050PA972
 Governor no. : 0 421 801 542

Cust. part no. : 0200740202

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x length mm : 8.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.15...13.25

Del. quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.3...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1400

Del. quantity : 201.5...203.5

1000 : (198.5...206.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10
Speed rpm : 1090...1105
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.50...5.70
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 13.15...13.25

Measurement

Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 11.10...11.30 *
2nd pressure hPa : 400
Rack travel in m: 12.00...12.20 *
5th pressure hPa : -
Rack travel in m: 10.00...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 3500
Speed rpm : 400

Del.quantity cm³/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1090...1106

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 50.0...70.0
1000 s: (46.0...74.0)
Rack travel in mm : 10.10...10.40
* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB
 Edition : 6.12.93
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 916
 Injection pump
 Pump designation : PE6P120A320LS7836-10
 EP type number : 0 412 626 854
 Governor
 Governor design. : RQV300...1050PA797
 -17
 Governor no. : 0 421 813 884
 Cust. part no. : 0200740302
 Customer-spec. information
 Customer : MERCEDES-BENZ
 Engine : OM401 LA
 1st version kW : 200.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 100...120
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050

 Rack travel in mm : 13.15...13.25

 Del. quantity cm³/ : 20.1...20.3

 100 s: (19.8...20.6)

 Spread cm³ : 0.5

 100 s: (0.9)

 2nd speed rpm : 300.0
 Rack travel in mm : 5.3...5.9
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.11...1.41
 2nd speed rpm : 637
 travel mm : 4.93...5.43
 3rd speed rpm : 830
 travel mm : 6.02...6.52
 4th speed rpm : 1107
 travel mm : 8.28...8.68
 5th speed rpm : 1218
 travel mm : 9.75...10.25

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1125
Rack travel in mm : 15.20...17.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1400
Del.quantity : 201.5...203.5
1000 : (198.5...206.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:

Speed rpm : 200
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

Speed rpm : 300.. 500

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 400
Pressure hPa : 1400
Rack travel mm : 13.15...13.25

Measurement

Speed 1/min : 400

1st pressure hPa : 250
Rack travel in m: 11.10...11.30 *
2nd pressure hPa : 400
Rack travel in m: 12.00...12.20 *
5th pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400
Speed rpm : 800
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 350
Speed rpm : 400
Del.quantity cm³/ : 148.5...151.5
1000 s: (145.5...154.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

* Value only applies to initial setting of LDA spring.
Ultimate setting of the LDA spring is performed by way of the appropriate setting given in the delivery curve.